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1994-1996 HAMILTON-WENTWORTH COLLISION REPORT

VOLUME 2: DRIVERS, PEDESTRIANS AND ENVIRONMENT

PREPARED BY:

DEPARTMENT OF
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1994-1996 Hamilton-Wentworth Collision Report
Volume 2: Drivers, Pedestrians and Environment

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Prepared For:

The Transportation Department
of the Regional Municipality of Hamilton-Wentworth
and
The Hamilton-Wentworth Regional Police Department

By:

The City of Hamilton Public Works and Traffic Department

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ACKNOWLEDGEMENTS

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The Project Staff was comprised of Ms. Linda Juchniewicz, Ms. Wendy Crevier, Mr. H. Solomon, and Mr. Rob Galloway of the Traffic Division. The Department wishes to thank Mr. Roland Salmon and the staff of the Services Division of the City Clerk's Department for their assistance in the printing of the report.

1994-1996 HAMILTON-WENTWORTH COLLISION REPORT - VOLUME 2

Introduction

The report is a summary of general factors associated with traffic collisions that occurred in the Regional Municipality of Hamilton-Wentworth in 1994 through 1996. This report details driver and pedestrian behaviour and road and weather conditions based on a 3-year average. **All statistics in this report are an average of the 1994, 1995 and 1996 occurrences.** The information in this portion will be produced every 3 years. A companion report details specifics of locations and trends and is produced annually.

The Regional Municipality of Hamilton-Wentworth is situated in southern Ontario at the westerly end of Lake Ontario. The following municipalities are located within the Region: the Town of Ancaster; the Town of Dundas; the Town of Flamborough; the Township of Glanbrook; the City of Hamilton and the City of Stoney Creek. The estimated total population of these combined localities was 467,799 in 1996.

Traffic collisions are a primary cause of accidental deaths, injuries and associated property losses. The intention of this report is to provide factual information to those agencies and persons concerned with the safety of the roadway transportation system within the Regional Municipality of Hamilton-Wentworth.

Traffic collisions frequently involve complex interactions between human behaviour, vehicle characteristics and environmental conditions. The factor or factors responsible for causing a collision are not always the most obvious nor are they always readily apparent. Caution should be exercised in drawing conclusions from the statistics presented in this report and conclusions should be drawn only with appropriate qualifications and supportive information.

The information presented in this report is based primarily upon motor vehicle collisions investigated by the Hamilton-Wentworth Regional Police. All collisions occurring in Hamilton-Wentworth are included in the statistics in this report excluding collisions occurring on the Queen

EXECUTIVE SUMMARY

* The period from 1 a.m. to 5 a.m. exhibits the highest ratio of collisions to vehicle volume using the street system.
* Drivers under the age of 35 years were involved in a disproportionate number of collisions relative to the age distribution of the licensed driving population of Ontario.
* The predominant improper driver action indicated in collisions was "failed to yield right-of-way".
* 5.9 percent of reported collisions involved one or more drivers who had been drinking.
* Most collisions involving alcohol occurred in the evening from 8 p.m. to 3 a.m. These figures are indicative of alcohol being present in the bloodstream of one or more of the drivers involved in the collision and do not necessarily mean that alcohol was the proximate cause of the collision.
* Pedestrians between the ages of 5 and 19 years and over 75 years of age were involved in a disproportionate number of collisions based on the age distribution of the population of Hamilton-Wentworth. Pedestrians between the ages of 10 and 14 years of age were most frequently involved in a collision as a result of crossing without right-of-way or running onto the roadway.

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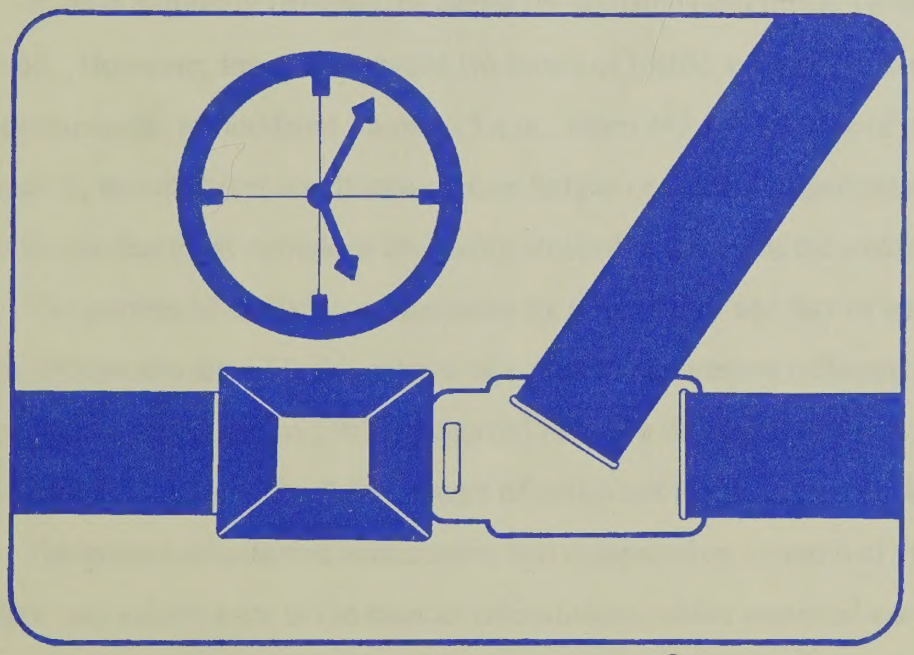
Chapter One
Selected
Characteristics



Chapter One
Selected Characteristics

Chapter One
Selected
Characteristics

Chapter 1

Time of Occurrence

A close similarity between the trends for collisions and traffic volumes (Exhibit 1.1) was observed. However, the collision rate (in terms of traffic volume) was greater than the daily average during the period from 1 a.m. to 5 a.m., when 345 or 6 percent of all collisions occurred. This may be due to driver conditions such as fatigue or alcohol impairment (refer to Exhibit 2.4 which shows that most collisions involving alcohol occurred in the evening).

The pattern of collision occurrences by time of day and day of week was summarized, and the differences found in the pattern of collision occurrence reflected traffic volumes. The highest number of collisions (1073) occurred between the hours of 3 p.m. to 4 p.m. on Fridays (Exhibit 1.2), with the highest percentage of collisions occurring on Fridays (Exhibit 1.3).

The pattern of collision occurrences was compared on a month of year basis (Exhibit 1.4) and there was a difference in the number of collisions which occurred each month. The higher number of collisions occurred during January and February. This is likely due to drivers not adjusting for road conditions during a more severe than usual winter.

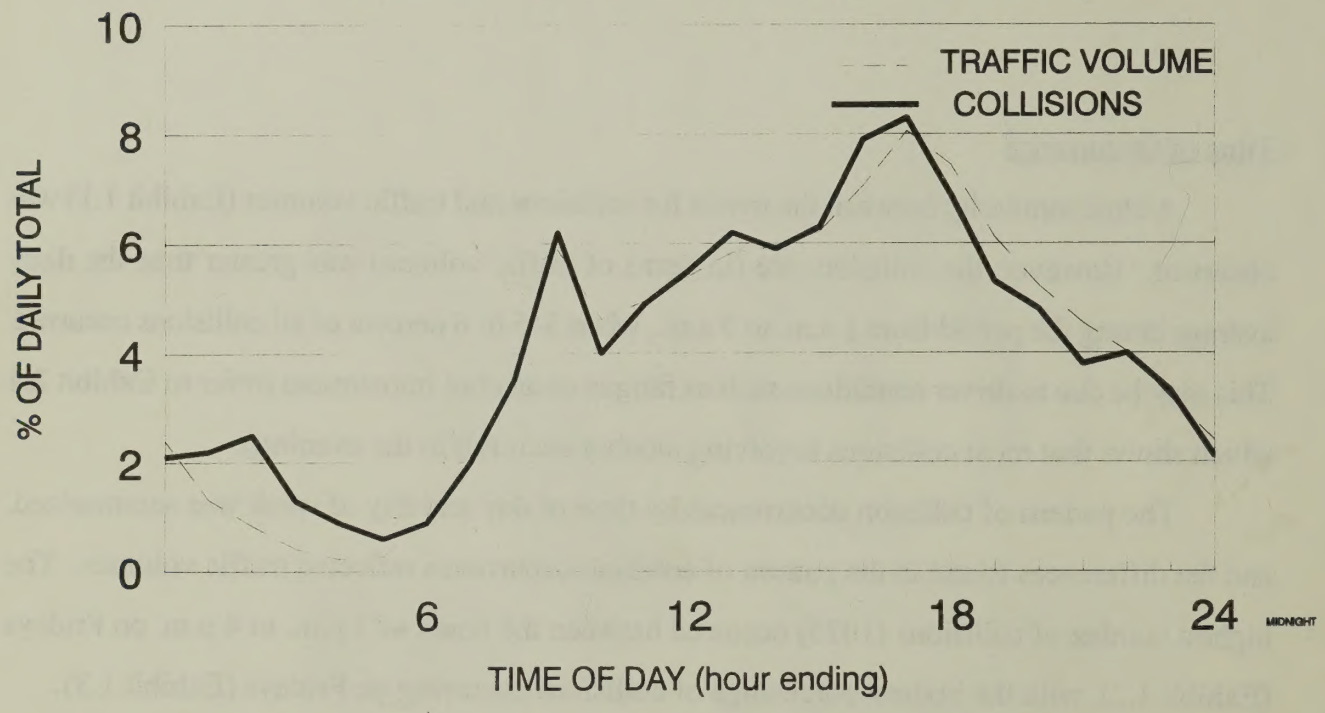
Impact Type

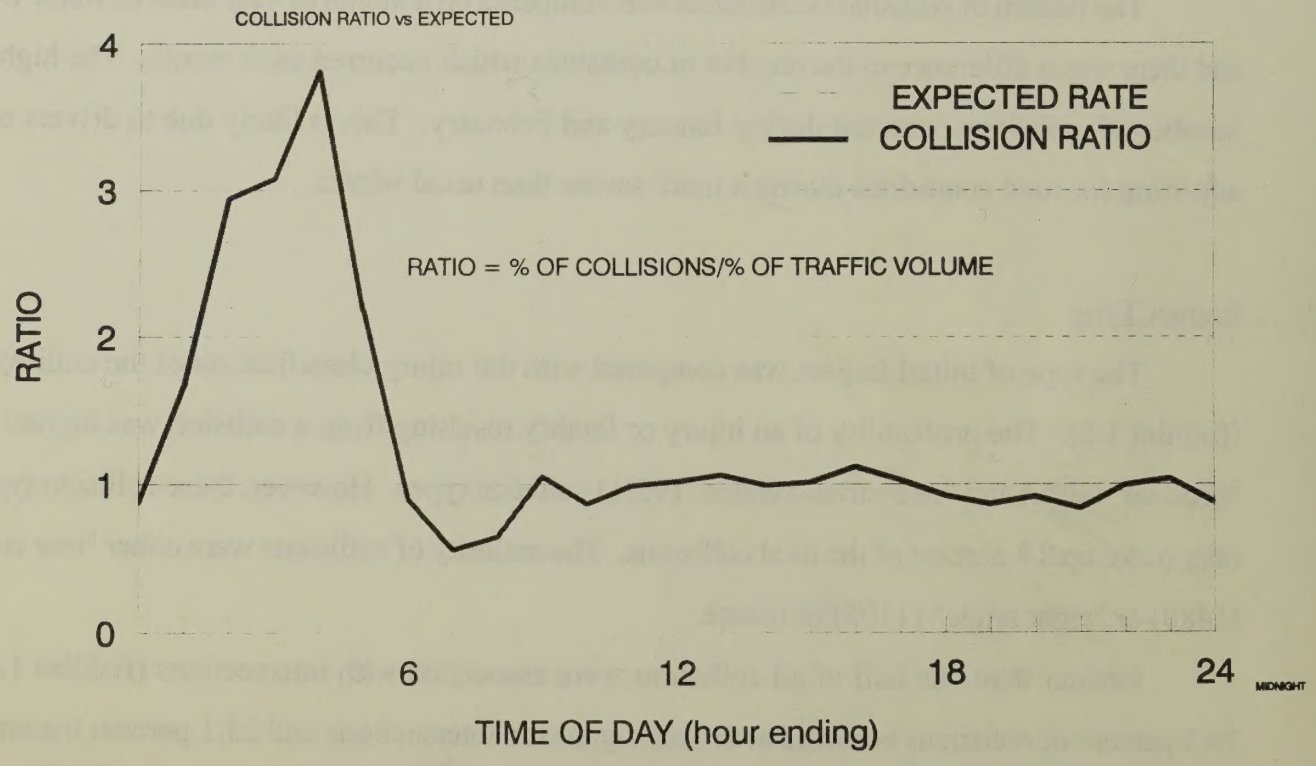
The type of initial impact was compared with the injury classification of the collisions (Exhibit 1.5). The probability of an injury or fatality resulting from a collision was highest in "head on" (49%) and "pedestrian/vehicle" (95%) collision types. However, these collision types only make up 8.8 percent of the total collisions. The majority of collisions were either "rear end" (1480) or "right angle" (1105) in nature.

Greater than one half of all collisions were associated with intersections (Exhibit 1.6). 29.3 percent of collisions occurred at or near signalized intersections and 25.1 percent occurred at or near intersections with stop or yield control (Exhibit 1.7). Fifty percent of all collisions occurred at locations with no form of traffic control.

Exhibit 1.1

TIME OF DAY vs TRAFFIC VOLUME





COLLISIONS OCCURRED AT A MUCH HIGHER THAN EXPECTED RATE (RELATIVE TO TRAFFIC VOLUME) BETWEEN 1 A.M AND 5 A.M DAILY

Exhibit 1.2

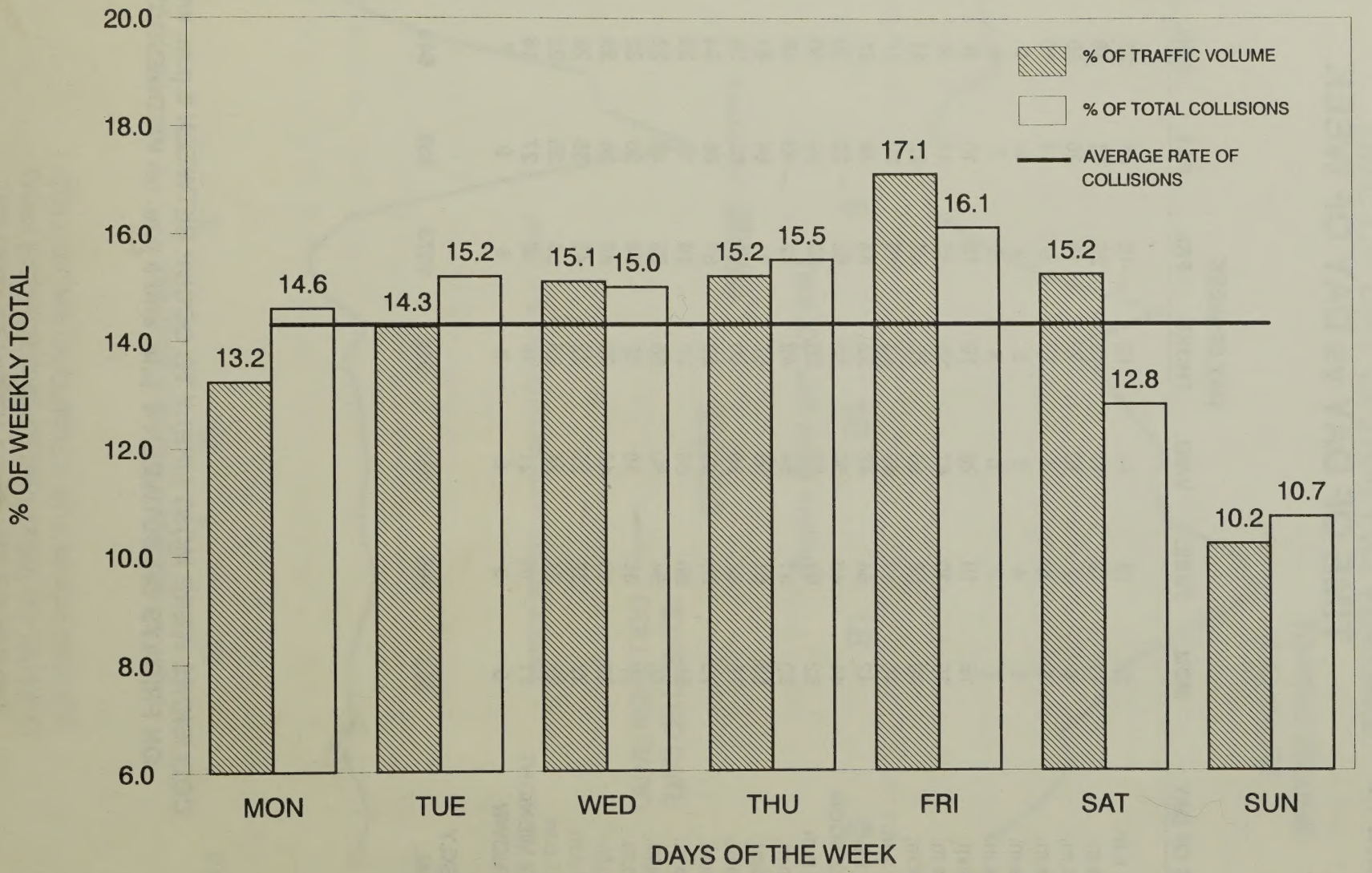
TIME OF DAY vs DAY OF WEEK

	DAY OF WEEK							DAILY	
TIME OF DAY	MON.	TUES.	WED.	THURS.	FRI.	SAT.	SUN.	TOTAL	%
12-1 a.m.	12	13	14	12	16	41	27	135	2.1%
1-2 a.m.	11	12	15	15	20	51	38	163	2.6%
2-3 a.m.	8	7	10	7	16	25	30	104	1.7%
3-4 a.m.	5	6	4	6	9	17	16	64	1.0%
4-5 a.m.	3	4	3	5	5	9	9	38	0.6%
5-6 a.m.	7	7	6	8	8	7	9	52	0.8%
6-7 a.m.	15	19	26	19	15	10	9	113	1.8%
7-8 a.m.	35	30	42	36	35	14	9	202	3.2%
8-9 a.m.	60	58	80	70	59	22	11	359	5.7%
9-10 a.m.	40	41	42	43	48	39	17	271	4.3%
10-11 a.m.	42	54	48	53	44	44	21	306	4.9%
11-12 NOON	44	46	50	55	60	62	30	348	5.5%
12-1 p.m.	52	61	55	56	68	62	50	405	6.4%
1-2 p.m.	50	51	54	49	62	63	48	377	6.0%
2-3 p.m.	55	61	55	57	71	64	43	406	6.4%
3-4 p.m.	75	87	80	80	92	63	39	516	8.2%
4-5 p.m.	78	80	90	83	81	66	34	512	8.1%
5-6 p.m.	59	60	66	70	76	58	38	427	6.8%
6-7 p.m.	45	54	60	56	63	42	32	354	5.6%
7-8 p.m.	37	38	38	52	54	38	32	289	4.6%
8-9 p.m.	33	33	40	32	43	36	29	247	3.9%
9-10 p.m.	27	32	29	42	45	35	25	235	3.7%
10-11 p.m.	22	24	24	25	38	35	23	192	3.0%
11-12 MIDNIGHT	11	16	21	18	35	27	16	144	2.3%
UNKNOWN	5	3	5	8	8	9	7	44	0.7%
WEEKLY TOTAL	833	899	958	959	1073	938	643	6302	100%

COLLISIONS WERE MOST LIKELY TO OCCUR BETWEEN 3 p.m. and 4 p.m. ON FRIDAYS OR BETWEEN 4 p.m. and 5 p.m. on WEDNESDAYS.

Exhibit 1.3

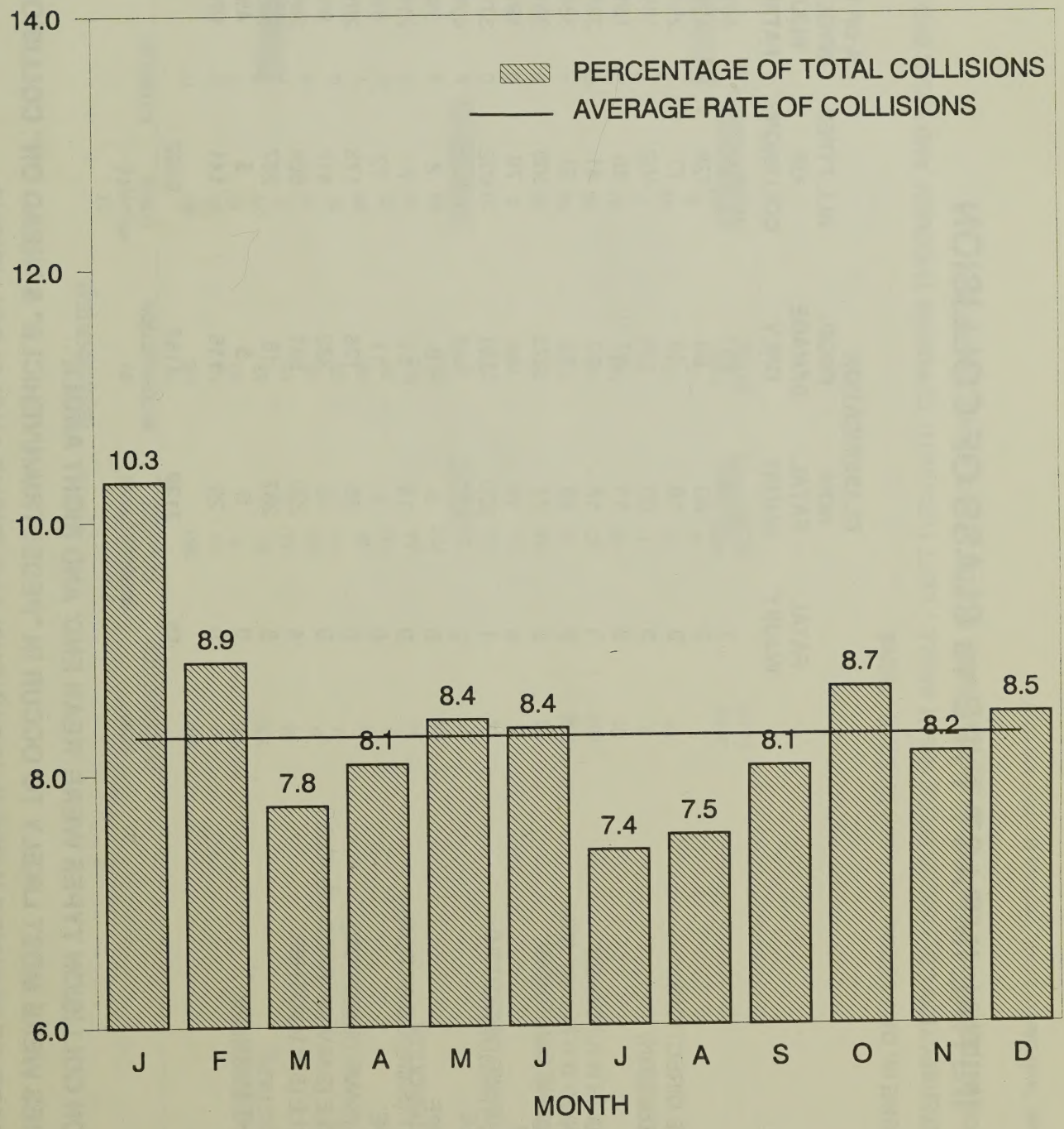
DAY OF WEEK vs COLLISIONS AND VOLUME



WEDNESDAYS, THURSDAYS AND FRIDAYS HAD MORE COLLISIONS THAN EXPECTED WHEN COMPARED TO TRAFFIC VOLUME. THE HIGHEST NUMBER OF COLLISIONS OCCURED ON FRIDAYS.

Exhibit 1.4

COLLISIONS vs MONTH OF THE YEAR



THE HIGHEST PERCENTAGE OF COLLISIONS OCCURRED IN THE MONTHS OF JANUARY AND FEBRUARY.

Exhibit 1.5

INITIAL IMPACT TYPE vs CLASS OF COLLISION

INITIAL IMPACT TYPE (a)	CLASSIFICATION FATAL INJURY	NON-FATAL INJURY	PROP. DAMAGE ONLY	ALL TYPES OF COLLISIONS	% OF TYPE INVOLVING INJURY/ FATALITY
REAR END	1	582	897	1480	40%
HEAD ON	2	60	66	128	49%
SIDE SWIPE (OPPOSITE DIRECTION)	0	18	59	77	25%
SIDE SWIPE (SAME DIRECTION)	0	65	336	402	16%
OVERTAKING	0	13	67	80	16%
RIGHT TURN REAREND	1	18	62	81	23%
RIGHT TURN ONCOMING	0	19	32	51	38%
LEFT TURN ONCOMING	0	77	223	300	26%
LEFT TURN REAREND	0	14	64	78	19%
LEFT TURN OPPOSING THROUGH	1	220	381	602	37%
RIGHT ANGLE	2	455	648	1105	42%
RIGHT TURN SIDE SWIPE	0	0	8	8	3%
THROUGH WITH RIGHT (SAME DIRECTION)	0	14	57	71	21%
LEFT TURN SIDE SWIPE	0	1	11	12	8%
THROUGH WITH LEFT (SAME DIRECTION)	0	35	138	173	20%
SINGLE MOTOR VEHICLE (S.M.V.)/PARKED VEHICLE	0	35	382	417	9%
SINGLE MOTOR VEHICLE (S.M.V.)/OTHER	4	220	581	804	28%
PEDESTRIAN/VEHICLE	5	267	15	287	95%
LEFT TURN WITH RIGHT TURN	0	0	5	5	4%
OTHER	0	25	115	141	19%
TOTAL	16	2139	4147	6302	

THE MOST COMMON COLLISION TYPES WERE 'REAR END' AND RIGHT ANGLE'.
INJURIES/FATALITIES WERE MOST LIKELY TO OCCUR IN "PEDESTRIAN/VEHICLE" & "HEAD ON" COLLISIONS.
THE HIGHEST NUMBER OF INJURIES WERE IN 'REAR END' AND 'RIGHT ANGLE' COLLISIONS.

(a) The traffic movements causing these collisions are shown diagrammatically on the chart in Appendix A.1.

Exhibit 1.6

INITIAL IMPACT TYPE vs ROAD CLASSIFICATION

INITIAL IMPACT TYPE	ROAD LOCATION					
	NON-INTERSECTION	INTERSECTION RELATED	IN INTERSECTION	AT PRIVATE DRIVE	OTHER (a)	TOTAL
REAR END	601	368	395	99	17	1480
HEAD ON	97	10	12	6	2	128
SIDE SWIPE (OPPOSITE DIRECTION)	55	8	10	4	1	77
SIDE SWIPE (SAME DIRECTION)	228	67	83	21	3	402
OVERTAKING	45	14	13	7	1	80
RIGHT TURN REAREND	9	20	35	17	0	81
RIGHT TURN ONCOMING	7	11	28	6	0	51
LEFT TURN ONCOMING	36	39	129	96	1	300
LEFT TURN REAREND	7	18	38	15	0	78
LEFT TURN OPPOSING THROUGH	39	84	408	70	0	602
RIGHT ANGLE	55	175	783	86	6	1105
RIGHT TURN SIDE SWIPE	0	2	6	0	0	8
THROUGH WITH RIGHT (SAME DIRECTION)	13	12	27	20	0	71
LEFT TURN SIDE SWIPE	0	3	7	2	0	12
THROUGH WITH LEFT (SAME DIRECTION)	26	24	93	30	0	173
SINGLE MOTOR VEHICLE (S.M.V.)/PARK. VEH.	304	31	25	54	4	417
SINGLE MOTOR VEHICLE (S.M.V.)/OTHER	494	82	127	55	46	804
PEDESTRIAN/VEHICLE	90	46	126	22	2	287
LEFT TURN WITH RIGHT TURN	1	1	3	0	0	5
OTHER (a)	51	15	30	42	2	141
		0	0	0	0	0
TOTAL	2158	1030	2378	651	86	6302
%	34.2%	16.3%	37.7%	10.3%	1.4%	100.0%

54% OF COLLISIONS WERE IN, OR ASSOCIATED WITH INTERSECTIONS.

THE MOST COMMON INTERSECTION COLLISIONS WERE 'RIGHT ANGLE', 'LEFT TURN WITH 'OPPOSING THROUGH' AND 'REAR END'.

THE MOST COMMON NON-INTERSECTION COLLISIONS WERE 'SINGLE MOTOR VEHICLE AND 'REAR END'.

(a) "OTHER" includes 'at railroad', 'underpass or tunnel', 'overpass or bridge' and 'other'.

Exhibit 1.7

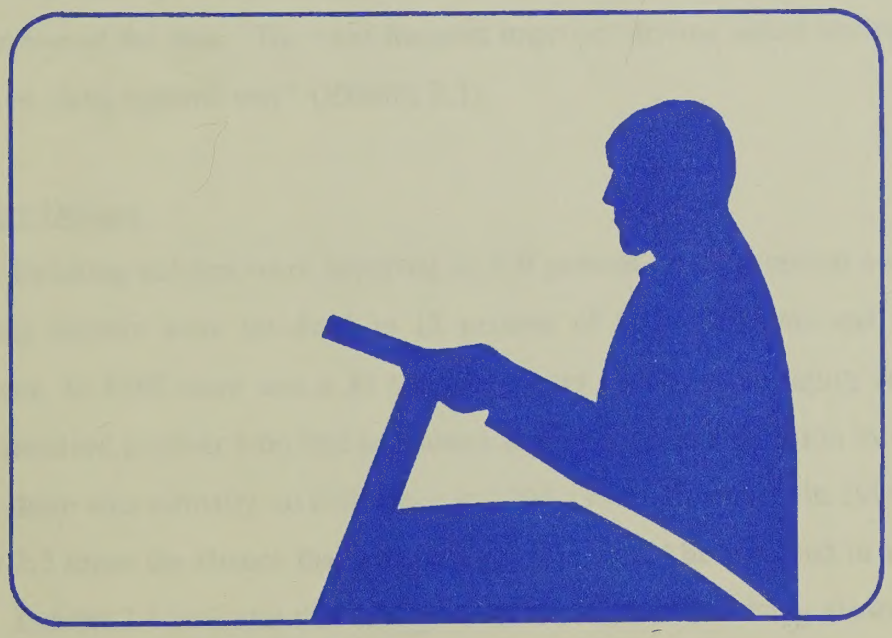
INITIAL IMPACT TYPE vs TYPE OF TRAFFIC CONTROL

INITIAL IMPACT TYPE	TYPE OF TRAFFIC CONTROL AT LOCATION (a)										
	TRAFFIC SIGNAL	STOP SIGN	YIELD SIGN	POLICE CONTROL	SCHOOL GUARD	SCHOOL BUS	TRAFFIC GATE	TRAFFIC CONTROL PERSON*	NO TRAFFIC CONTROL	OTHER	TOTAL
REAR END	415	242	19	4	3	1	2	4	789	3	1480
HEAD ON	10	19	1	0	0	0	1	0	97	1	128
SIDE SWIPE (OPPOSITE DIRECTION)	6	10	1	0	0	0	0	0	59	0	77
SIDE SWIPE REAR	95	63	2	0	0	0	0	1	241	1	402
OVERTAKING	14	14	0	0	0	0	0	0	52	0	80
RIGHT TURN REAR END	28	26	1	0	0	0	0	0	26	0	81
RIGHT TURN ONCOMING	14	22	0	0	0	0	0	0	14	0	51
LEFT TURN ONCOMING	40	147	1	0	0	0	0	0	112	1	300
LEFT TURN REAR END	18	36	1	0	0	0	0	0	23	0	78
LEFT TURN OPPOSING THROUGH	390	99	2	0	0	0	0	0	111	0	602
RIGHT ANGLE	482	502	1	1	0	0	0	1	114	3	1105
RIGHT TURN SIDE SWIPE	7	1	0	0	0	0	0	0	0	0	8
THRU. WITH RIGHT (SAME DIRECT'N)	24	15	0	0	0	0	0	1	32	0	71
LEFT TURN SIDE SWIPE	10	1	0	0	0	0	0	0	2	0	12
THRU. WITH LEFT (SAME DIRECT'N)	75	46	0	0	0	0	0	0	52	0	173
S.M.V./PARKED VEHICLE	13	71	0	0	0	0	0	0	330	2	417
S.M.V./OTHER	82	127	5	1	0	0	3	1	577	7	804
PEDESTRIAN/VEHICLE	110	67	0	0	1	0	0	0	107	2	287
LEFT TURN WITH RIGHT TURN	4	1	0	0	0	0	0	0	0	0	5
OTHER	14	34	0	0	0	0	0	1	91	1	141
TOTAL	1848	1543	35	8	4	1	6	9	2829	20	6302
%	29.3%	24.5%	0.6%	0.1%	0.1%	0.0%	0.1%	0.1%	44.9%	0.3%	100.0%

45% OF ALL COLLISIONS OCCURRED AT LOCATIONS WITH NO TRAFFIC CONTROL.
THE MOST COMMON COLLISION TYPE AT A TRAFFIC SIGNAL WAS 'RIGHT ANGLE'.
THE MOST COMMON COLLISION TYPE AT A STOP SIGN WAS 'RIGHT ANGLE'.

(a) Includes all collisions at both intersection and non-intersection locations.

* Any person directing traffic who is not a police officer or school crossing guard.



Chapter Two
Drivers

Driver Age

Although persons under the age of 25 make up only 14.8 percent of the licensed driving population, this age group was represented by 19.5 percent of drivers reported in collisions in 1994 through 1996. (Exhibit 2.1).

Drivers over the age of 64, involved in a collision, were recorded as driving properly only 38.7 percent of the time. The most frequent improper driving action recorded for this group was "failed to yield right-of-way" (Exhibit 2.2).

Drinking Drivers

Drinking drivers were involved in 5.9 percent of all reported collisions (Exhibit 2.3). Drinking drivers were involved in 13 percent of fatal collisions and 5.6 percent of injury collisions. In 1985 there was a 33 percent greater chance of an injury occurring in a collision which involved a driver who had consumed alcohol than in a collision in which all drivers were sober; there was virtually no difference in 1994-1996. However, in 1994-1996, there was still almost 2.5 times the chance that a drinking driver would be involved in a fatal collision.

Exhibit 2.4 indicates that 63.5 percent of collisions involving alcohol occurred during the period from 8 p.m. to 3 a.m.

Exhibit 2.5 indicates that only 13.3 percent of the drivers involved in collisions who admitted to alcohol consumption but were not legally impaired, were driving properly. Less than 3 percent of drivers who were legally impaired due to alcohol were recorded as driving properly at the time of the collision. The most frequently indicated improper driver action was loss of control of the vehicle.

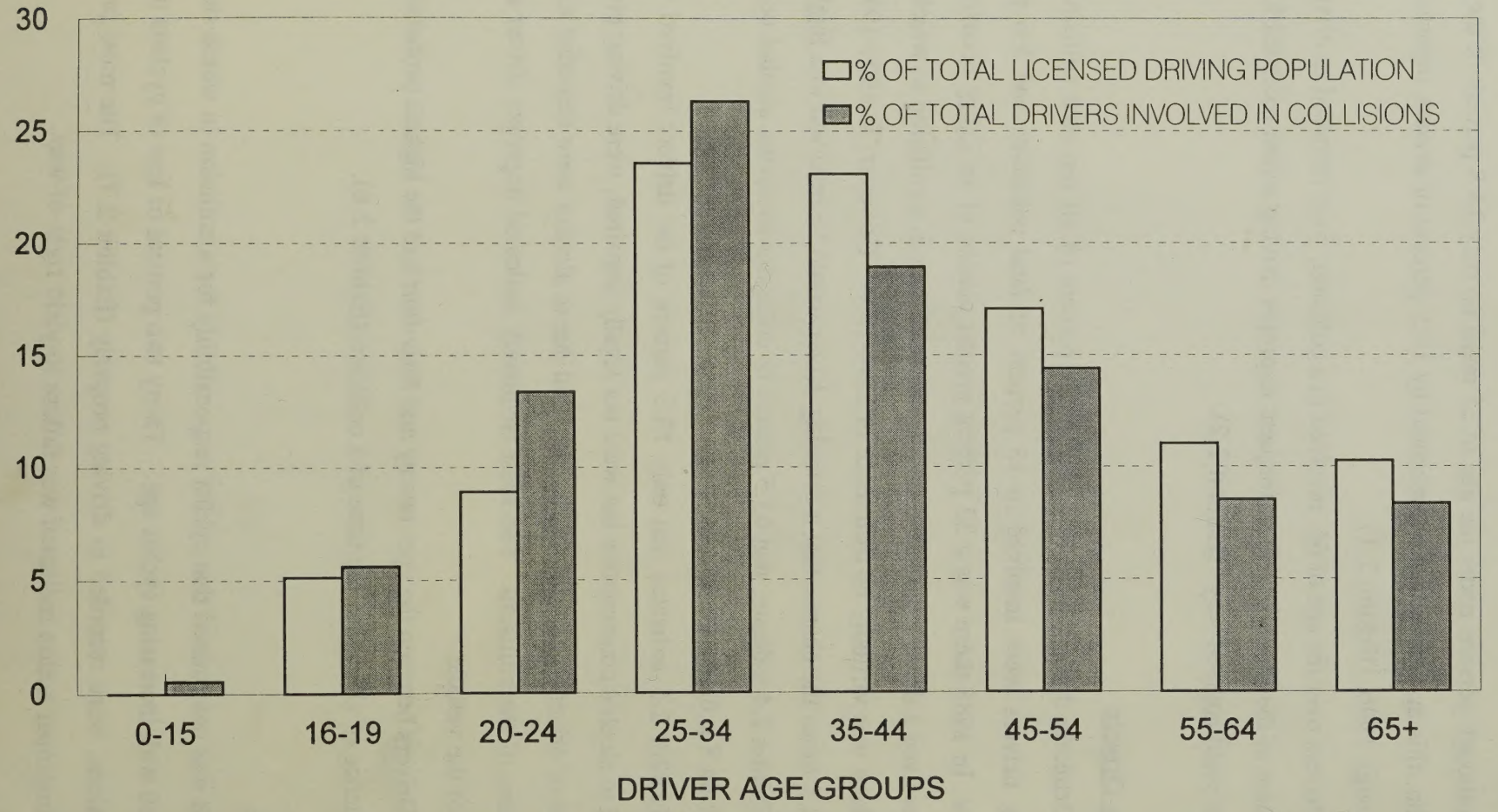
Drivers between the ages twenty and forty-four had the highest probability of being under the influence of alcohol at the time of a collision (Exhibit 2.6).

Cyclists

It was determined that cyclist responsibility for a collision in which she/he was involved decreased with increasing cyclist age. Thirty two percent or less of cyclists under 19, involved in collisions, were recorded as driving properly (Exhibit 2.7). The most predominant known cyclist improper action indicated was failure to yield right-of-way.

Exhibit 2.1

MOTOR VEHICLE DRIVER AGE vs COLLISION INVOLVEMENT



DRIVERS UNDER 35 YEARS OF AGE ARE INVOLVED IN MORE COLLISIONS THAT EXPECTED BASED ON THE AGE DISTRUBUTION OF THE LICENSED DRIVING POPULATION OF ONTARIO.

Exhibit 2.2

MOTOR VEHICLE DRIVER AGE vs DRIVER ACTION

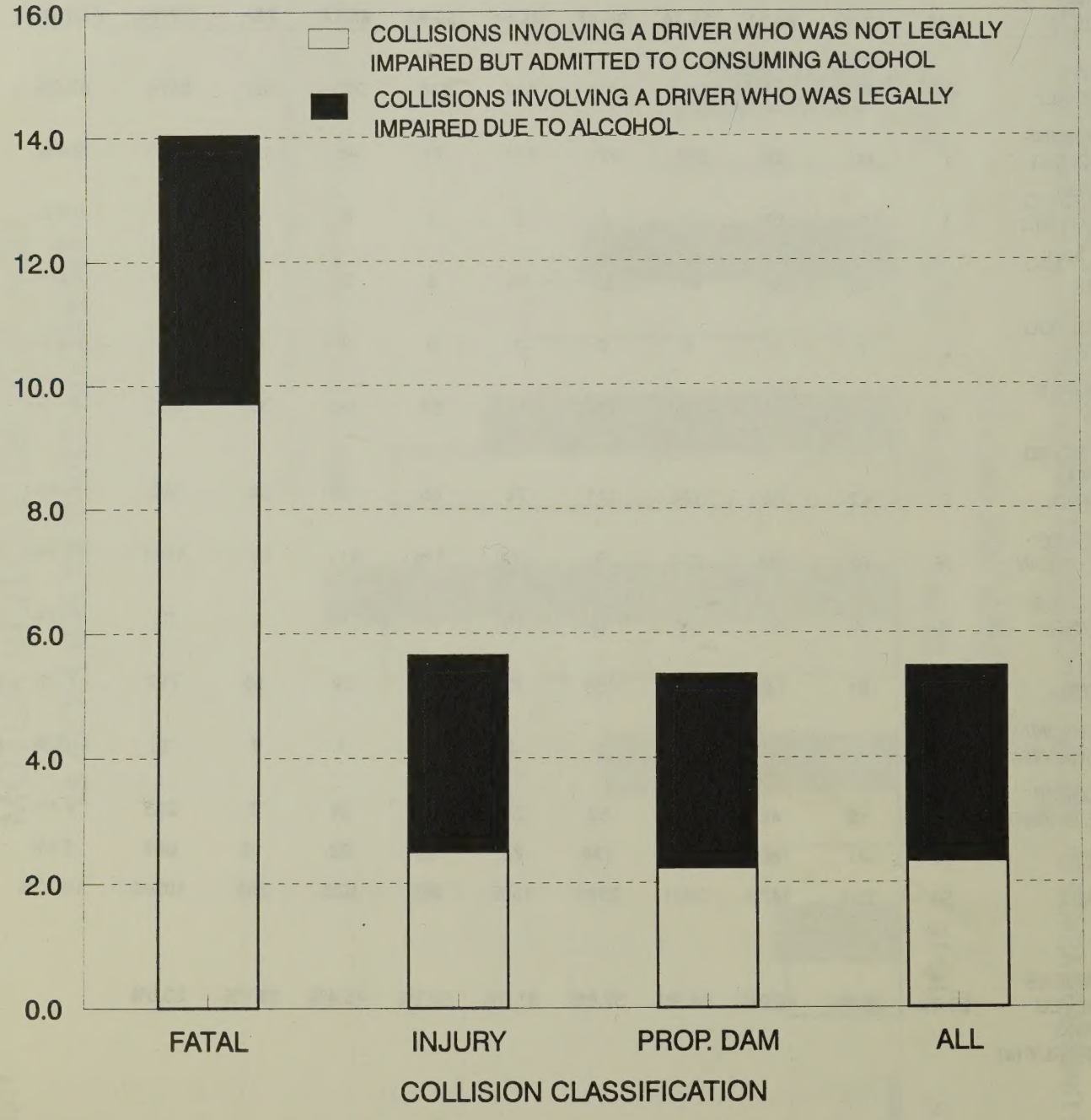
DRIVER ACTION	DRIVER AGE 0-15	16-19	20-24	25-34	35-44	45-54	55-64	65-74	75+	TOTAL	% OF ALL ACTIONS
DRIVING PROPERLY	10	211	641	1498	1307	917	510	275	106	5474	50.0%
FOLLOWING TOO CLOSE	1	80	166	308	221	117	71	48	18	1030	9.4%
EXCEEDING SPEED LIMIT	1	7	12	11	5	2	1	0	1	40	0.4%
SPEED TOO FAST	1	18	36	41	33	15	8	2	1	154	1.4%
SPEED TOO SLOW	0	0	0	1	0	1	0	0	0	3	0.0%
IMPROPER TURN	3	32	75	132	104	84	63	54	36	583	5.3%
DISOBEYED TRAFFIC CONTROL	8	42	94	144	111	74	49	45	24	592	5.4%
FAILED TO YIELD R.O.W.	16	82	164	301	251	174	118	111	66	1284	11.7%
IMPROPER PASSING	0	4	12	25	18	10	7	5	3	83	0.8%
LOST CONTROL	10	91	146	221	158	73	45	29	16	790	7.2%
WRONG WAY ON ONE-WAY	1	4	5	12	6	4	3	3	1	38	0.3%
IMPROPER LANE CHANGE	1	19	42	61	53	32	30	21	7	265	2.4%
OTHER	10	41	86	165	128	83	46	33	18	609	5.6%
TOTAL	60	631	1479	2921	2396	1586	950	626	296	10944	100.0%
% DRIVERS INVOLVED DRIVING PROPERLY (a)	20.4%	35.8%	46.0%	54.3%	57.6%	61.0%	56.3%	46.4%	38.1%	53.0%	

THE OVERALL PERCENTAGE OF DRIVERS DRIVING PROPERLY WAS 53%. YOUNGER AND OLDER DRIVERS WERE LEAST LIKELY TO BE DRIVING PROPERLY. THE MOST FREQUENTLY RECORDED IMPROPER DRIVING ACTION WAS FAILING TO YIELD RIGHT-OF-WAY.

(a) Excluding "Other".

Exhibit 2.3

ALCOHOL INVOLVEMENT vs COLLISION CLASSIFICATION



5.9% OF ALL COLLISIONS INVOLVED A DRIVER WHO HAD CONSUMED ALCOHOL.

Exhibit 2.4

TIME OF DAY AND DAY OF WEEK

	DAY OF WEEK							
TIME OF DAY	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL
12-1 a.m.	1	3	3	3	5	9	7	31
1-2 a.m.	3	2	4	6	8	17	11	50
2-3 a.m.	1	1	2	2	4	5	11	26
3-4 a.m.	0	0	1	1	2	3	3	10
4-5 a.m.	0	0	1	0	1	1	2	5
5-6 a.m.	0	0	0	0	0	1	1	3
6-7 a.m.	0	0	0	0	0	1	1	2
7-8 a.m.	0	0	0	0	1	0	2	2
8-9 a.m.	0	0	0	0	1	1	1	3
9-10 a.m.	0	0	0	0	1	0	0	1
10-11 a.m.	0	0	0	1	1	0	1	3
11-12 noon	0	0	0	1	0	1	1	2
12-1 p.m.	0	0	0	0	2	1	0	5
1-2 p.m.	0	0	2	1	1	1	0	5
2-3 p.m.	1	1	1	1	1	1	1	6
3-4 p.m.	1	2	2	1	2	2	0	9
4-5 p.m.	1	2	1	2	3	4	1	14
5-6 p.m.	2	1	1	2	2	5	4	16
6-7 p.m.	1	1	2	4	3	2	2	15
7-8 p.m.	3	1	2	3	3	4	4	19
8-9 p.m.	3	1	2	2	3	6	5	23
9-10 p.m.	2	2	3	4	7	5	3	26
10-11 p.m.	4	4	2	3	5	6	3	26
11-12 midnight	2	4	2	3	7	7	2	27
UNKNOWN	0	0	0	1	2	1	0	4
TOTAL	24	26	32	39	64	85	65	335

MOST COLLISIONS INVOLVING ALCOHOL OCCURRED IN THE EVENING FROM 8 p.m. TO 3 a.m.

Exhibit 2.5

DRIVER ACTION vs DRIVER CONDITION

DRIVER ACTION	NORMAL	HAD BEEN DRINKING (a)	IMPAIRED-ALCOHOL OVER .08 (b)	IMPAIRED-ALCOHOL (c)	IMPAIRED-DRUGS (d)
DRIVING PROPERLY	5329	20	5	1	0
FOLLOWING TOO CLOSE	881	12	12	4	1
EXCEEDING SPEED LIMIT	27	3	5	0	0
SPEED TOO FAST	123	9	6	1	0
SPEED TOO SLOW	3	0	0	0	0
IMPROPER TURN	513	6	6	2	0
DISOBEYED TRAFFIC CONTROL	505	11	16	4	1
FAILED TO YIELD R.O.W.	1151	14	10	3	1
IMPROPER PASSING	64	2	3	1	0
LOST CONTROL	576	49	58	13	2
WRONG WAY ON ONE-WAY	31	2	2	1	0
IMPROPER LANE CHANGE	239	3	3	0	0
OTHER	457	19	34	8	1
TOTAL	9898	150	159	40	6
% DRIVERS INVOLVED DRIVING PROPERLY (e)	56.5%	15.6%	3.7%	4.1%	0.0%

LESS THAN 16% OF DRIVERS WHO HAD BEEN DRINKING AND LESS THAN 4% OF DRIVERS WHO WERE IMPAIRED DUE TO ALCOHOL WERE RECORDED AS DRIVING PROPERLY AT THE TIME OF THE COLLISION.

(a) Driver had consumed alcohol but their physical condition was not legally impaired.
(b) Driver had consumed alcohol and upon testing was found to have a blood-alcohol level in excess of 80 mg.

DRIVER CONDITION

FATIGUE	MEDICAL DISABILITY	INATTENTIVE	UNKNOWN	OTHER	TOTAL	%
1	4	10	205	3	5577	48.5%
1	3	41	121	0	1075	9.3%
0	0	1	10	1	47	0.4%
0	0	6	21	1	168	1.5%
0	0	0	0	0	3	0.0%
1	0	25	54	1	608	5.3%
2	1	34	58	1	631	5.5%
0	1	45	123	0	1347	11.7%
0	0	3	23	0	96	0.8%
9	9	22	164	6	910	7.9%
0	0	2	4	0	41	0.4%
0	1	11	33	0	289	2.5%
4	6	19	140	10	698	6.1%
18	24	219	954	23	11491	100.0%
5.4%	20.6%	4.8%	24.6%	23.0%	51.7%	

(c) Driver had consumed sufficient alcohol to warrant being charged with a drinking and driving offence in the judgement of the investigating officer.
(d) Driver had used drugs and was legally impaired in the judgement of the investigating officer.
(e) Excluding not known and other.

Exhibit 2.6

DRIVER AGE vs DRIVER CONDITION

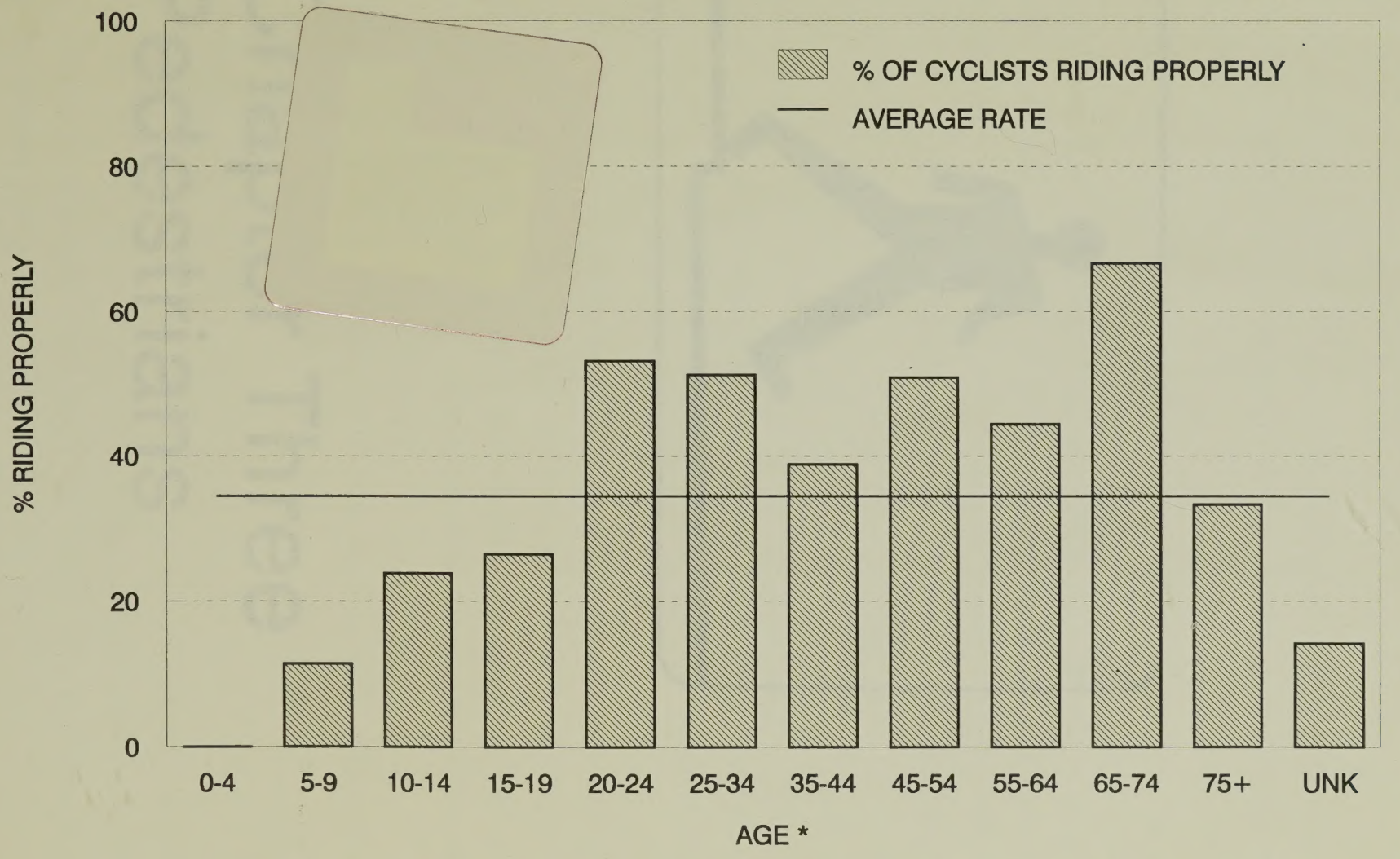
DRIVER CONDITION	DRIVER AGE 0-15	16-19	20-24	25-34	35-44	45-54	55-64	65-74	75+	NO DRIVER	UNKNOWN	TOTAL	%
NORMAL	39	565	1304	2570	2112	1434	856	562	257	0	192	9899	86.0%
HAD BEEN DRINKING	1	6	26	51	36	12	6	4	1	0	9	150	1.3%
IMPAIRED-ALCOHOL OVER .08	0	2	15	53	47	21	14	4	2	0	2	159	1.4%
IMPAIRED-ALCOHOL	0	1	4	12	12	6	2	0	0	0	2	40	0.3%
IMPAIRED-DRUGS	0	0	2	3	1	1	0	0	0	0	0	6	0.1%
FATIGUE	0	1	3	3	5	3	1	1	0	0	1	18	0.2%
MEDICAL DISABILITY	0	1	1	4	6	3	3	4	2	0	0	24	0.2%
INATTENTIVE	4	16	29	54	42	23	19	15	11	1	5	219	1.9%
NOT KNOWN	7	37	92	169	133	82	48	35	21	0	346	968	8.4%
OTHER	1	2	2	5	3	2	1	1	2	1	4	24	0.2%
TOTAL	52	631	1479	2921	2396	1586	950	626	296	3	561	11508	100.0%
% DRINKING DRIVERS INVOLVED (a)	3.0%	1.5%	3.3%	4.2%	4.2%	2.6%	2.4%	1.4%	1.1%	0.0%	6.2%		

DRIVERS IN THE AGE GROUP 20 TO 44 WERE MOST LIKELY TO HAVE CONSUMED ALCOHOL BEFORE BEING INVOLVED IN A COLLISION.

(a) Excluding not known and other.

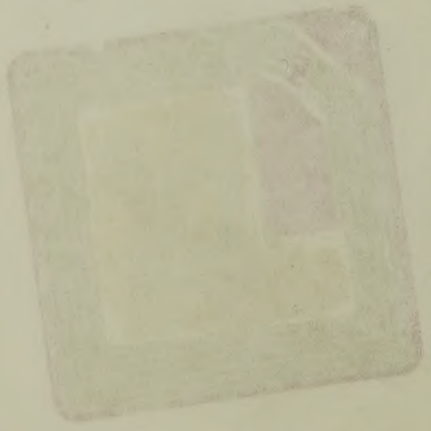
Exhibit 2.7

CYCLIST ACTIONS IN MOTOR VEHICLE COLLISIONS: PERCENTAGE RIDING PROPERLY vs AGE GROUP



OVER A 3 YEAR AVGERAGE, THE 5 TO 9 YEAR OLD AGE GROUP HAD THE POOREST RIDING PERFORMANCE.

*No cyclists were recorded in the 0-4 age group.



Chapter Three
Pedestrians

Chapter Three
Pedestrians

General

The average, from 1994-1996, were 290 pedestrian collisions resulting in 291 pedestrian injuries and 6 pedestrians fatalities (15 pedestrians were involved in a collision but were not hurt).

Age

The relationship between the Regional population distribution and pedestrian involvement in collisions from 1994 to 1996 was reviewed (Exhibit 3.1). It was determined that pedestrians between the ages of 5 and 19 and over 75 years of age were significantly over-represented in pedestrian collisions when compared to the age distribution of the Regional population.

Pedestrian Action

Exhibit 3.2 shows the pedestrian actions at the time of the collisions versus pedestrian age. In general, the instances of unsafe pedestrian action were greatest for pedestrians under 10-14 years of age.

This exhibit also indicates that the actions of crossing a signalized intersection without the right-of-way accounted for 19.2 percent of pedestrian actions at the time of the collision. These unsafe actions are particularly associated with pedestrians under 15 years of age.

In 40 percent of all pedestrian collisions the pedestrian was involved in an unsafe action (e.g. crossing illegally at a traffic signal).

Examination of the data for pedestrian collisions at traffic signals indicates that in 72% of cases, the pedestrian was not at fault (Exhibit 4.3).

Time of Collisions

The time of day when collisions occurred was compared to the number of pedestrians injured (Exhibit 3.4). It was determined that 9.3 percent of pedestrians were injured in collisions which occurred between 3 p.m. and 4 p.m. Exhibit 3.5 compares the time of day of pedestrian collisions with pedestrian age.

Pedestrian Condition

In most cases, the condition of the pedestrian (Exhibit 3.6) involved in the collision was reported as normal (69% of the time). However, in 9.6 percent of the collisions involving pedestrians, the pedestrian admitted to alcohol consumption or was legally impaired.

Location

Exhibit 3.7 examines the type of traffic control at locations where pedestrian collisions occurred. In 41 percent of the pedestrian collisions, the collision occurred at a non-intersection location with no control, 35% at a traffic signal controlled intersection, and 21 percent at a stop sign controlled intersection.

Driver Action

Exhibit 3.8 indicates that in 64 percent of the motor vehicle/pedestrian collisions, the driver was recorded as driving properly. This figure does not necessarily suggest that the drivers involved in these collisions were totally without blame but does indicate that a majority of pedestrian collisions are associated with improper pedestrian action or lack of awareness of traffic conditions at the time of the collision.

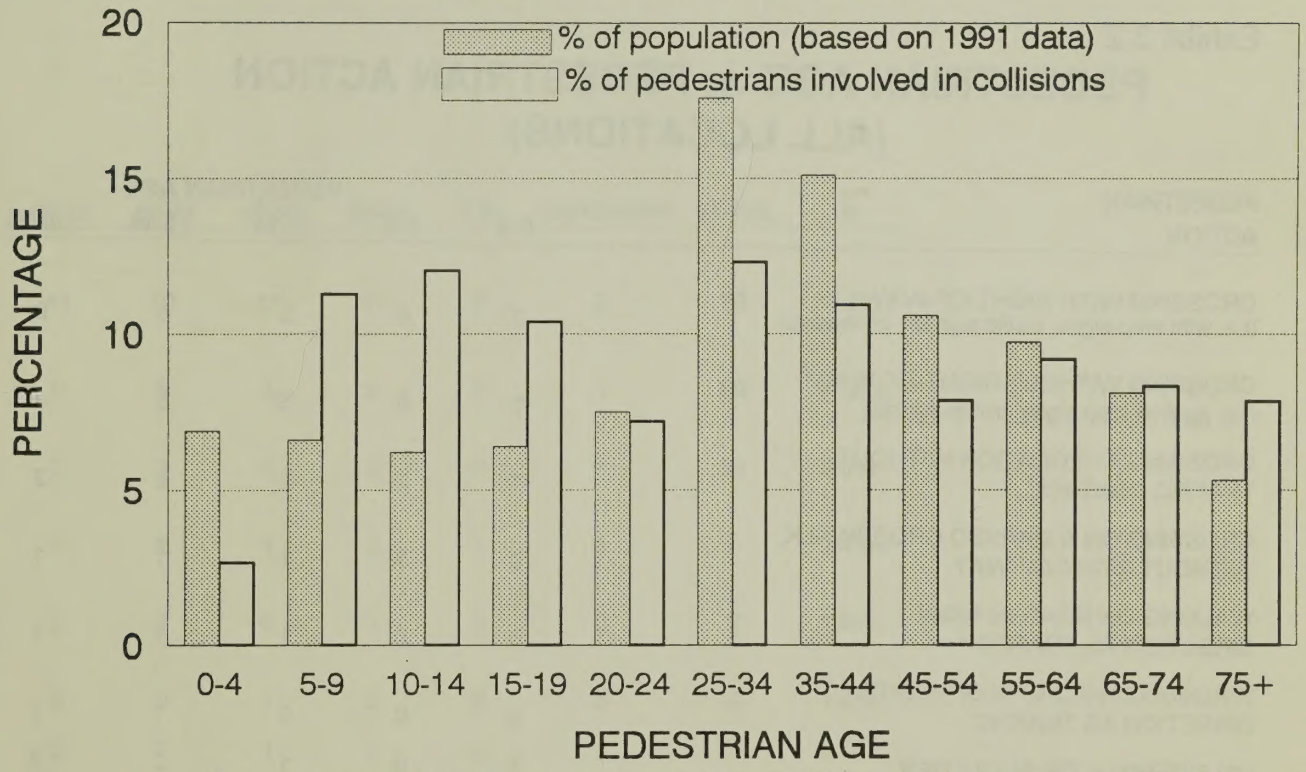
Of the 36 percent of motor vehicle/pedestrian collisions in which the driver was not driving properly, the most frequently recorded driver action was "failing to yield the right-of-way" (associated with 20.9% of all motor vehicle - pedestrian collisions).

Pedestrian Injuries

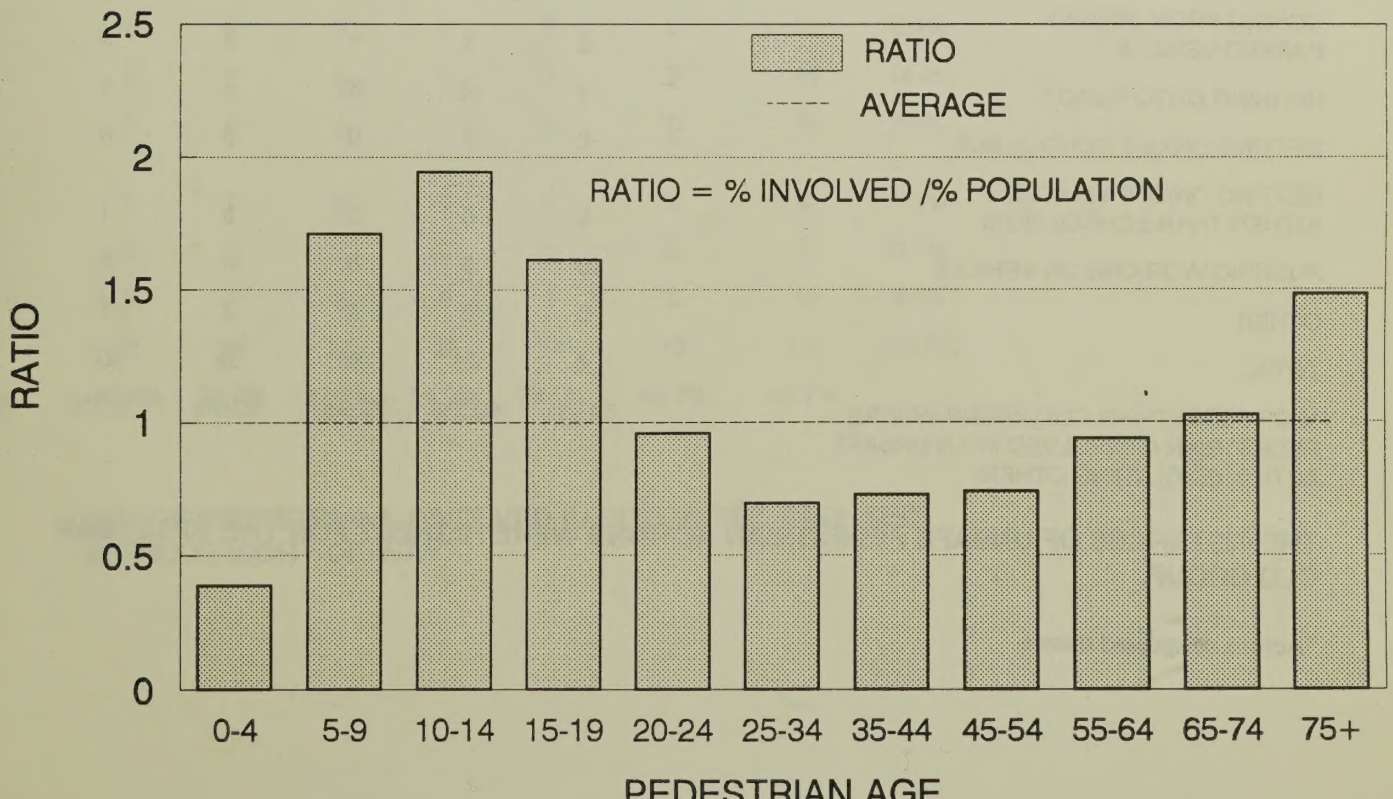
Most pedestrians (86.1%) suffered no, minimal or minor injuries when involved in a collision.

Exhibit 3.1

PEDESTRIAN AGE vs COLLISION INVOLVEMENT



Over a 3 year average, there were 9 pedestrian collisions where age was not recorded.



Over a 3 year average, pedestrians from 5 to 19 years and over 75 years of age are significantly over-represented in pedestrian collisions based on the age distribution of Hamilton-Wentworth.

Exhibit 3.2

PEDESTRIAN AGE vs PEDESTRIAN ACTION (ALL LOCATIONS)

PEDESTRIAN ACTION	PEDESTRIAN AGE 0-4	5-9	10-14	15-19	20-24	25-34
CROSSING WITH RIGHT-OF-WAY (i.e. with stop signs, traffic signals, driveways)	2	4	5	8	6	12
CROSSING WITHOUT RIGHT-OF-WAY * (i.e. against stop signs, traffic signals)	0	5	10	8	4	7
CROSSING AT LOCATION WITHOUT TRAFFIC CONTROL	1	2	2	2	2	2
CROSSING ON A MARKED CROSSWALK, WITHOUT RIGHT-OF-WAY	0	3	1	1	1	0
WALKING ON ROAD IN SAME DIRECTION AS TRAFFIC *	0	0	1	1	1	2
WALKING ON ROAD IN OPPOSITE DIRECTION AS TRAFFIC	0	0	0	1	1	0
ON SIDEWALK OR SHOULDER	1	0	1	2	2	4
PLAYING ON HIGHWAY *	0	1	2	0	1	1
COMING FROM BEHIND PARKED VEHICLE *	0	3	1	2	0	1
RUNNING ONTO ROAD *	4	15	10	4	1	2
GETTING ON/OFF SCHOOL BUS	0	0	0	0	0	0
GETTING ON/OFF VEHICLE (OTHER THAN SCHOOL BUS)	0	0	0	0	1	0
PUSHING/WORKING ON VEHICLE	0	0	0	0	0	0
OTHER	0	0	2	2	1	5
TOTAL	8	34	36	32	22	36
% OF PEDESTRIAN COLLISIONS WHERE PEDESTRIAN IS INVOLVED IN AN UNSAFE ACTION (EXCLUDING OTHER)	54.2%	69.3%	73.3%	50.6%	36.1%	39.8%

THE INSTANCES OF UNSAFE PEDESTRIAN ACTIONS WERE HIGHEST FOR THE 10-14 YEAR OLD GROUP.

* Actions considered unsafe

35-44	45-54	55-64	65-74	75+	UNKNOWN	TOTAL	%
15	10	14	12	8	2	98	31.5%
6	6	4	4	5	1	60	19.2%
2	3	5	3	5	1	29	9.5%
1	0	1	2	1	1	7	2.4%
0	0	0	1	0	0	6	1.9%
0	0	1	0	0	0	4	1.4%
2	2	1	1	2	1	19	6.2%
1	0	0	0	0	0	5	1.5%
1	0	0	0	0	0	10	3.1%
3	1	0	1	1	2	45	14.4%
0	0	0	0	0	0	0	0.0%
1	0	0	0	1	0	4	1.3%
0	0	0	0	0	0	0	0.1%
3	1	2	0	1	0	18	6.0%
33	24	27	25	24	10	310	100.0%
32.6%	31.9%	17.3%	24.3%	26.5%	42.9%	42.7%	

19% OF PEDESTRIANS INVOLVED IN COLLISIONS CROSSED WITHOUT RIGHT-OF-WAY.

Exhibit 3.3

PEDESTRIAN AGE vs PEDESTRIAN ACTION (AT TRAFFIC SIGNALS)*

PEDESTRIAN ACTION	PEDESTRIAN AGE 0-4	5-9	10-14	15-19	20-24	25-34
CROSSING WITH RIGHT-OF-WAY (i.e. with traffic signals)	1	2	3	5	5	6
CROSSING WITHOUT RIGHT-OF-WAY ** (i.e. against traffic signals)	0	1	2	3	3	3
CROSSING AT LOCATION WITHOUT TRAFFIC CONTROL	0	0	0	0	0	0
CROSSING ON A MARKED CROSSWALK, WITHOUT RIGHT-OF-WAY	0	2	1	1	1	0
WALKING ON ROAD IN THE SAME DIRECTION AS TRAFFIC **	0	0	0	0	0	0
WALKING ON ROAD IN OPPOSITE DIRECTION AS TRAFFIC	0	0	0	0	0	0
ON SIDEWALK OR SHOULDER	0	0	0	0	1	1
PLAYING ON HIGHWAY **	0	0	0	0	0	0
COMING FROM BEHIND PARKED VEHICLE **	0	0	0	0	0	0
RUNNING ONTO ROAD **	0	1	1	1	0	0
GETTING ON/OFF VEHICLE (OTHER THAN SCHOOL BUS)	0	0	0	0	0	0
PUSHING/WORKING ON VEHICLE	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	1	6	7	11	10	11
% OF PEDESTRIAN COLLISIONS WHERE PEDESTRIAN IS INVOLVED IN AN UNSAFE ACTION (EXCLUDING OTHER)	33.3%	33.3%	40.9%	36.4%	31.0%	28.1%

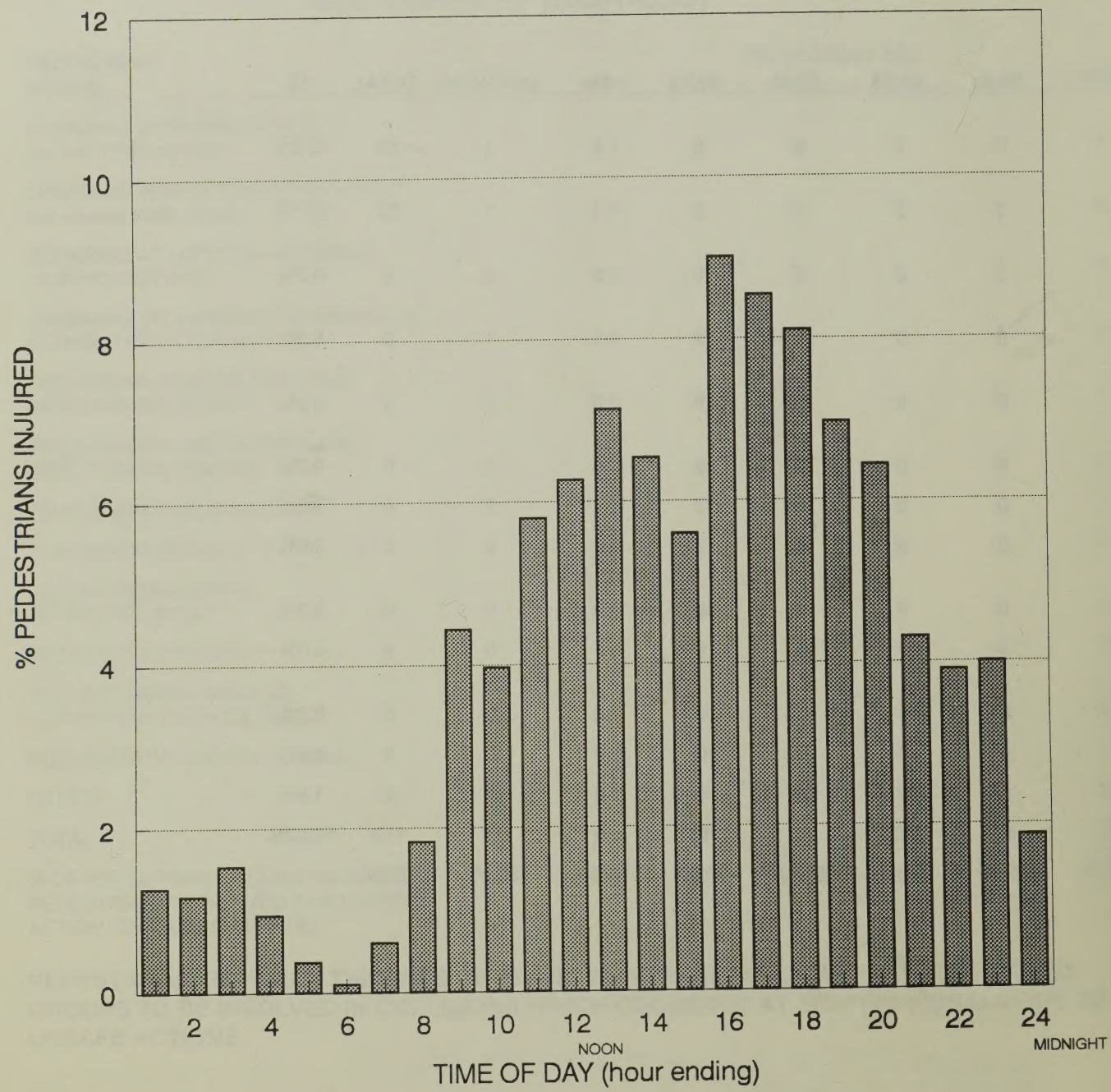
PEDESTRIANS BETWEEN THE AGES OF 10 AND 14 WERE MORE LIKELY THAN OTHER AGE GROUPS TO BE INVOLVED IN COLLISIONS WHICH OCCURRED AT TRAFFIC SIGNALS DUE TO UNSAFE ACTIONS.

* All collisions within 9 meters of the intersection are considered for this analysis.
** Actions considered unsafe

35-44	45-54	55-64	65-74	75+	UNKNOWN	TOTAL	%
11	7	9	8	5	1	66	59.9%
3	2	1	2	1	1	22	20.1%
0	0	0	0	0	0	0	0.3%
0	0	1	2	1	1	9	8.5%
0	0	0	0	0	0	0	0.3%
0	0	0	0	0	0	0	0.0%
0	0	0	0	1	0	4	4.0%
0	0	0	0	0	0	0	0.0%
0	0	0	0	0	0	0	0.3%
1	0	0	0	1	0	5	4.6%
0	0	0	0	0	0	0	0.3%
0	0	0	0	0	0	0	0.0%
0	0	0	0	0	0	2	1.8%
15	10	11	13	9	3	110	100.0%
23.9%	24.1%	6.3%	20.0%	21.4%	30.0%	25.2%	

Exhibit 3.4

TIME OF DAY vs NUMBER OF PEDESTRIANS INJURED



THE HIGHEST NUMBER OF PEDESTRIAN COLLISIONS OCCURRED BETWEEN THE HOURS OF 3 p.m. - 4 p.m.

TIME OF DAY vs PEDESTRIAN AGE

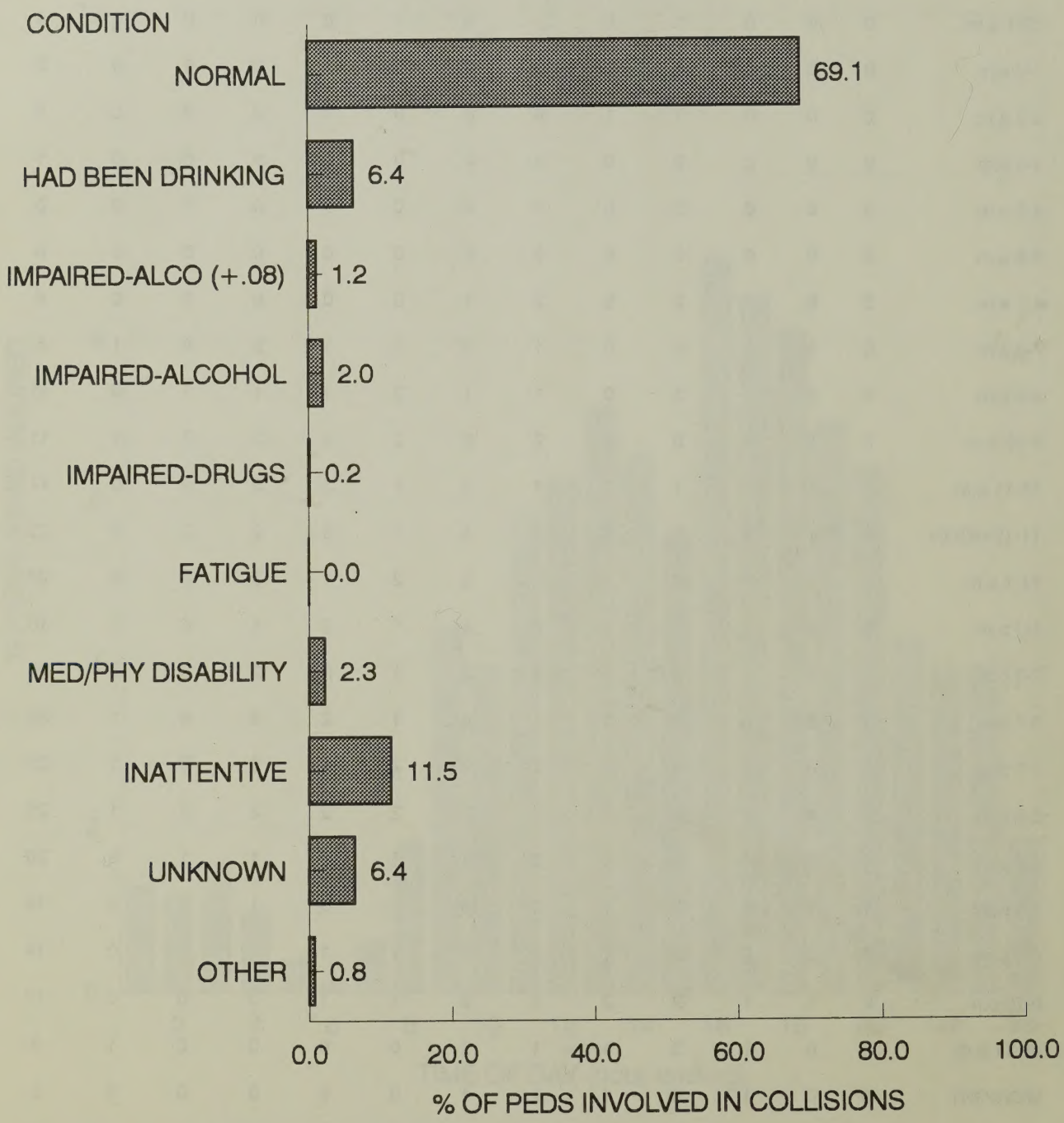
PEDESTRIAN AGE

TIME OF DAY	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75+	U/K	TOTAL
12-1 a.m.	0	0	0	1	0	1	0	1	0	0	0	0	4
1-2 a.m.	0	0	0	0	2	1	0	0	0	0	0	0	5
2-3 a.m.	0	0	0	1	1	0	0	0	0	0	0	0	3
3-4 a.m.	0	0	0	0	0	0	0	0	0	0	0	0	1
4-5 a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
5-6 a.m.	0	0	0	0	0	0	0	0	0	0	0	0	0
6-7 a.m.	0	0	0	0	0	2	1	0	0	0	0	0	4
7-8 a.m.	0	0	1	0	0	1	0	1	1	0	0	1	5
8-9 a.m.	0	2	3	3	0	1	1	2	1	1	1	0	15
9-10 a.m.	0	1	1	0	1	2	0	2	0	3	2	1	11
10-11 a.m.	1	1	0	1	1	1	3	1	3	3	2	0	17
11-12 NOON	0	2	2	2	1	3	3	1	5	2	2	0	22
12-1 p.m.	1	5	2	2	1	2	2	2	1	3	0	0	20
1-2 p.m.	0	2	1	0	0	2	4	1	2	1	4	1	16
2-3 p.m.	1	1	1	1	2	3	2	1	3	2	3	2	20
3-4 p.m.	1	5	8	3	1	1	4	1	2	3	4	1	32
4-5 p.m.	1	3	3	4	0	3	2	2	1	2	2	1	23
5-6 p.m.	2	4	2	2	2	3	2	2	2	2	2	1	25
6-7 p.m.	0	3	4	2	1	2	1	3	2	1	1	0	20
7-8 p.m.	1	1	2	2	1	2	1	1	3	1	0	0	16
8-9 p.m.	0	2	2	3	1	2	2	1	1	0	0	0	14
9-10 p.m.	0	1	1	2	2	1	3	1	1	0	0	0	12
10-11 p.m.	0	0	1	2	1	1	2	0	0	0	0	1	8
MIDNIGHT	0	0	1	0	1	2	1	0	0	0	0	0	5
UNKNOWN	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	8	34	36	31	22	37	33	24	27	25	23	10	310

18% OF PEDESTRIANS WERE INVOLVED IN COLLISIONS THAT OCCURRED BETWEEN THE HOURS OF 3 p.m. - 5 p.m.

Exhibit 3.6

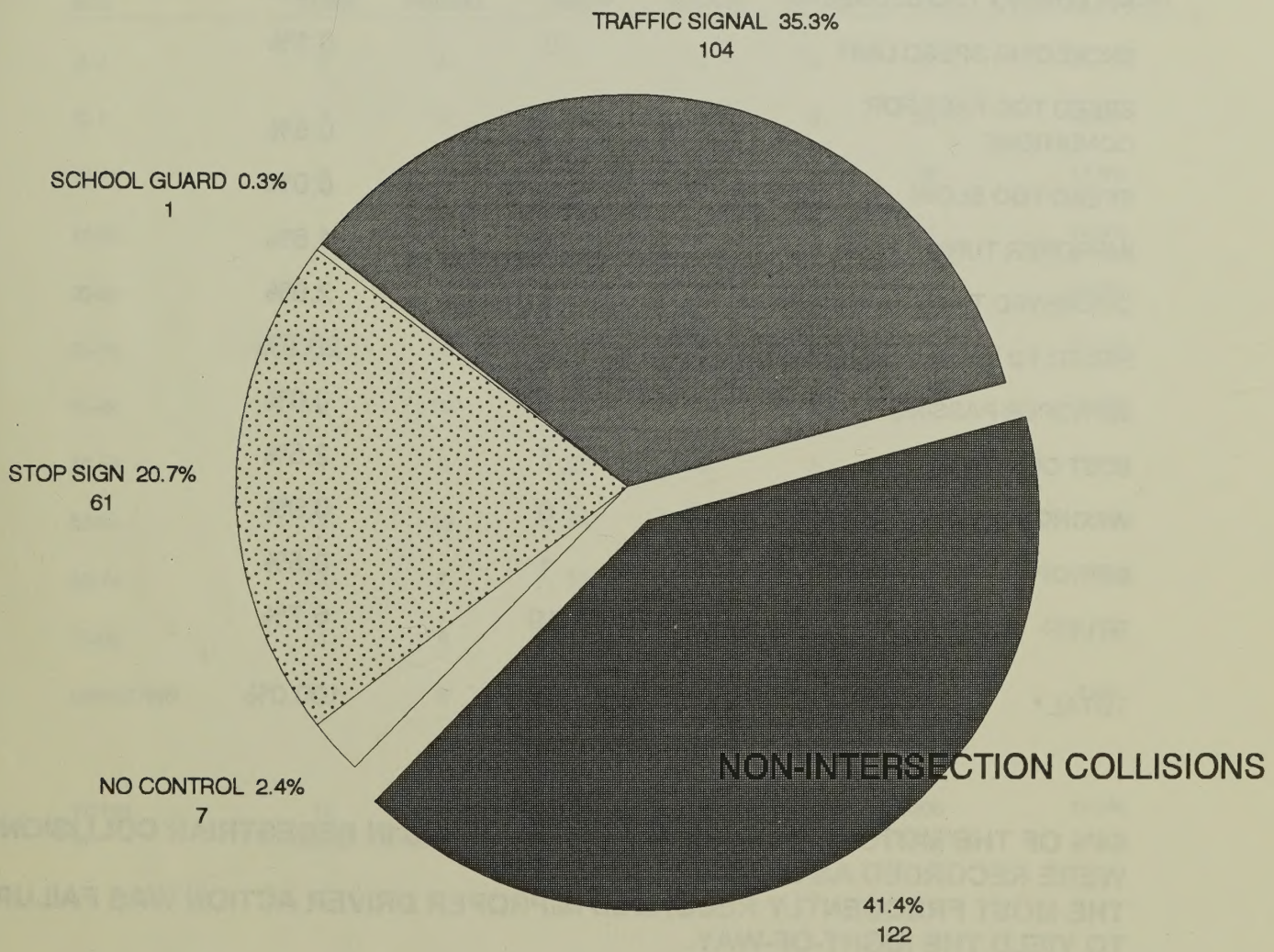
CONDITION OF PEDESTRIANS INVOLVED IN COLLISIONS



9.6% OF PEDESTRIANS INVOLVED IN COLLISIONS HAD CONSUMED ALCOHOL.

TYPE OF TRAFFIC CONTROL AT LOCATIONS WHERE PEDESTRIAN COLLISIONS OCCURED

COLLISIONS IN AN INTERSECTION



Pedestrians are most likely to be involved in a collision at a non-intersection location. The most common type of traffic control at an intersection, for pedestrian collisions, is at a traffic signal.

Exhibit 3.8

DRIVER ACTION IN PEDESTRIAN COLLISIONS

ACTION	NUMBER OF DRIVERS INVOLVED	PERCENTAGE
DRIVING PROPERLY	186	64.1%
FOLLOWING TOO CLOSE	1	0.5%
EXCEEDING SPEED LIMIT	0	0.1%
SPEED TOO FAST FOR CONDITIONS	1	0.5%
SPEED TOO SLOW	0	0.0%
IMPROPER TURN	5	1.6%
DISOBEYED TRAFFIC CONTROL	8	2.6%
FAILED TO YIELD R.O.W.	61	20.9%
IMPROPER PASSING	0	0.0%
LOST CONTROL	7	2.5%
WRONG WAY ON ONE-WAY	0	0.0%
IMPROPER LANE CHANGE	1	0.5%
OTHER	19	6.7%
TOTAL *	290	100.0%

64% OF THE MOTOR VEHICLE DRIVERS INVOLVED IN PEDESTRIAN COLLISIONS WERE RECORDED AS DRIVING PROPERLY.
THE MOST FREQUENTLY RECORDED IMPROPER DRIVER ACTION WAS FAILURE TO YIELD THE RIGHT-OF-WAY.

* Pedestrian collisions involved more than one driver or vehicle in some cases.

Exhibit 3.9

PEDESTRIAN AGE vs INJURY STATUS

PEDESTRIAN AGE	STATUS OF INJURY						
	NONE	MINIMAL	MINOR	MAJOR	FATAL	TOTAL	% MAJOR OR FATAL INJURY
0-4	0	4	1	1	0	8	21.7%
5-9	3	12	16	3	0	33	8.0%
10-14	2	15	12	6	1	36	17.8%
15-19	1	12	13	4	1	31	16.3%
20-24	1	9	10	2	0	21	10.9%
25-34	1	15	16	3	0	36	10.3%
35-44	2	10	16	5	0	33	15.3%
45-54	1	8	12	3	1	24	15.5%
55-64	1	10	13	3	0	27	12.3%
65-74	1	7	13	3	1	25	16.0%
75-98	1	6	13	4	1	24	19.7%
UNKNOWN	2	6	1	0	0	9	3.6%
TOTAL	15	113	135	37	6	306	14.0%
%	5.0%	37.0%	44.1%	12.0%	2.0%	100.0%	

OF ALL PEDESTRIANS INVOLVED IN COLLISONS, 86% SUFFERED NO INJURY OR ONLY MINIMAL OR MINOR INJURIES.

Chapter Four
Environment

Chapter Four
Environment

Chapter 4

Weather and Light Conditions

Exhibit 4.1 indicates that most collisions, in the period 1994-1996, occurred during clear weather conditions and under daylight conditions.

Road Surface

66 percent of collisions occurred under dry pavement conditions (Exhibit 4.2).

Pavement Markings

As shown in Exhibit 4.3, 85 percent of collisions occurred on roadways where the pavement markings were visible. It is important to note that pavement markings that are not visible to the driver are not necessarily associated with collision cause. Further analysis would be necessary to indicate whether or not there was a causal relationship.

Road Characteristics

The majority of collisions occurred at locations with straight, level geometrics (Exhibit 4.4). Exhibit 4.5 shows that most collisions (both non-intersection and intersection) occurred on two-way, undivided roads.

Road Location

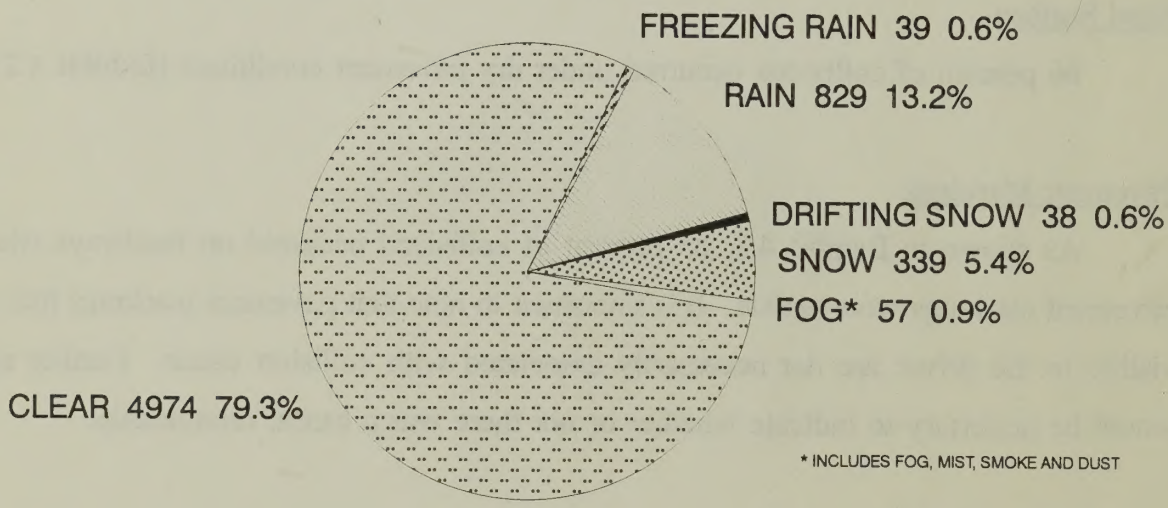
Exhibit 4.6 indicates that the greatest number of collisions occurred at or near intersections. As the exposure to vehicle conflicts is inherently greater at intersection locations, this result is not unexpected.

Fixed Objects

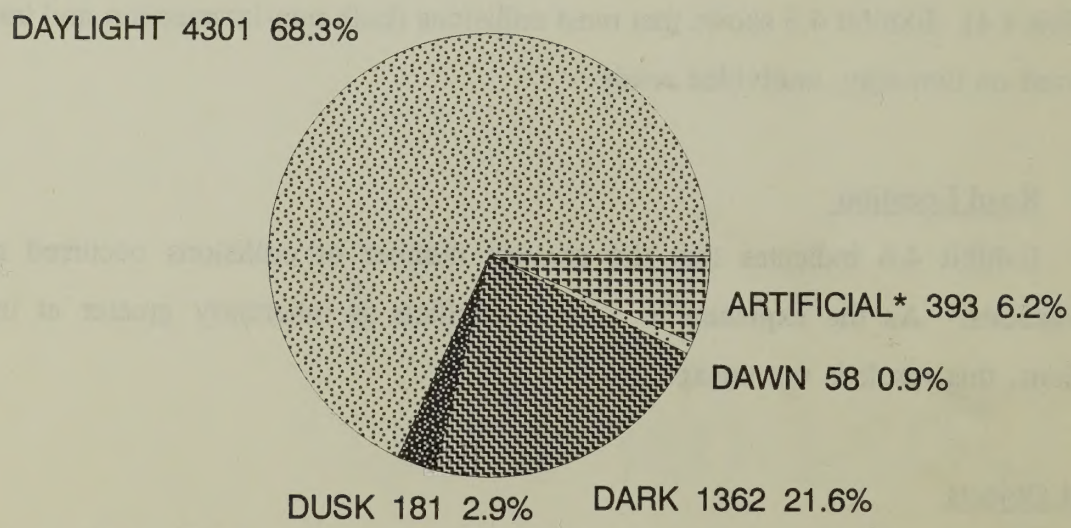
There were 322 recorded cases where vehicles struck fixed objects adjacent to the road (Exhibit 4.7). 100 drivers struck utility poles or poles supporting signs, the next most common object hit was a curb (58).

Exhibit 4.1

WEATHER AND LIGHT CONDITIONS IN MOTOR VEHICLE COLLISIONS



* INCLUDES FOG, MIST, SMOKE AND DUST



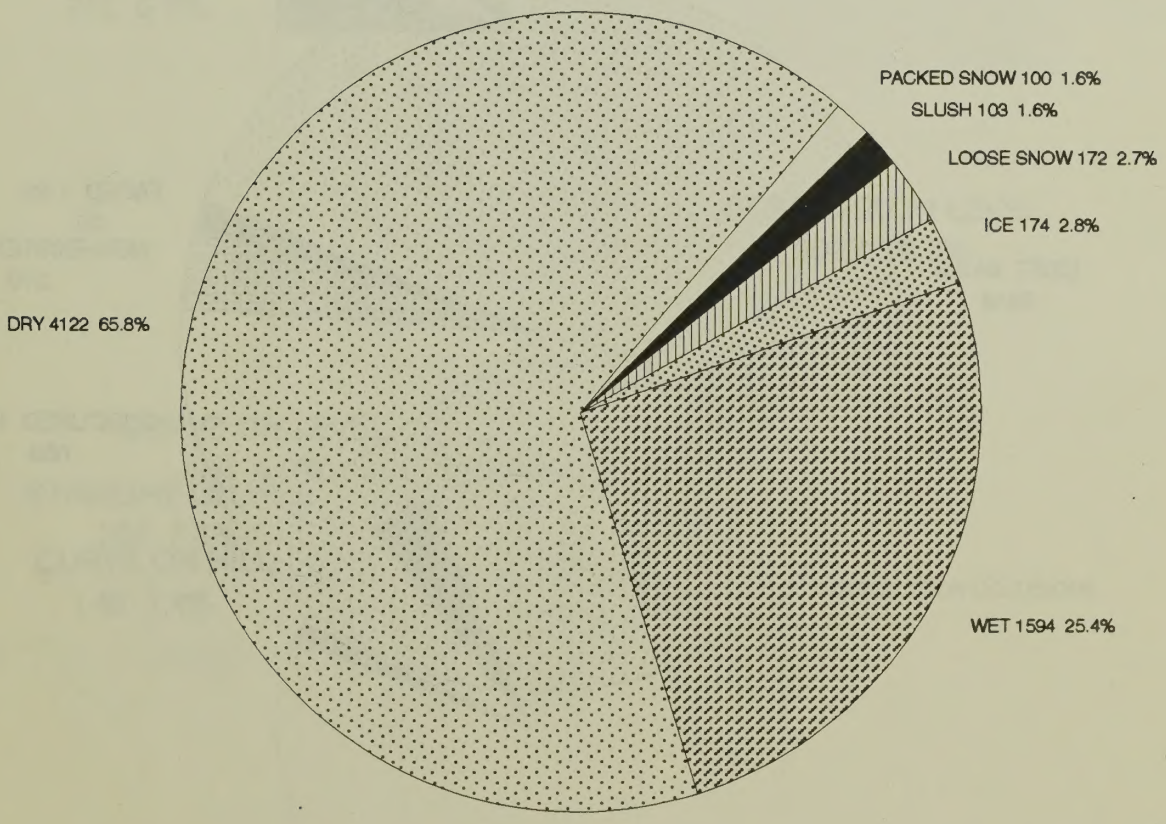
* INCLUDES ARTIFICIAL DAYLIGHT, DAWN , DUSK AND DARK

79% OF COLLISIONS OCCURRED DURING CLEAR WEATHER.
68% OF COLLISIONS OCCURRED IN DAYLIGHT.

ENVIRONMENT

Exhibit 4.2

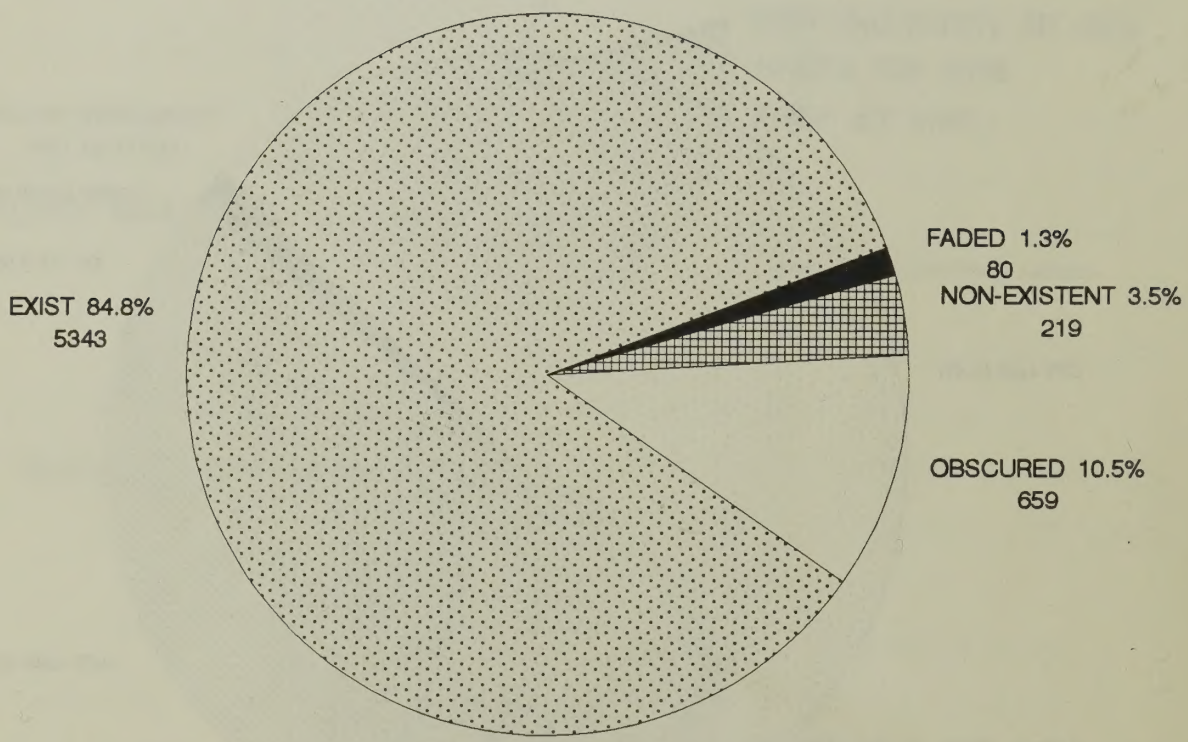
IN MOTOR VEHICLE COLLISIONS
ROAD SURFACE CONDITIONS



66% OF COLLISIONS OCCURED ON DRY ROAD SURFACES.

Exhibit 4.3

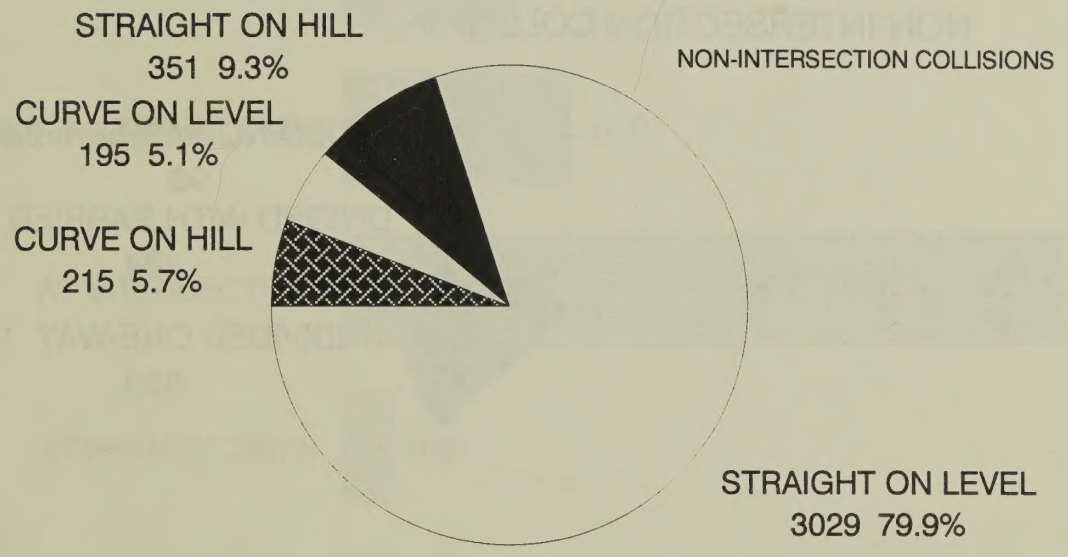
PAVEMENT MARKINGS IN MOTOR VEHICLE COLLISIONS

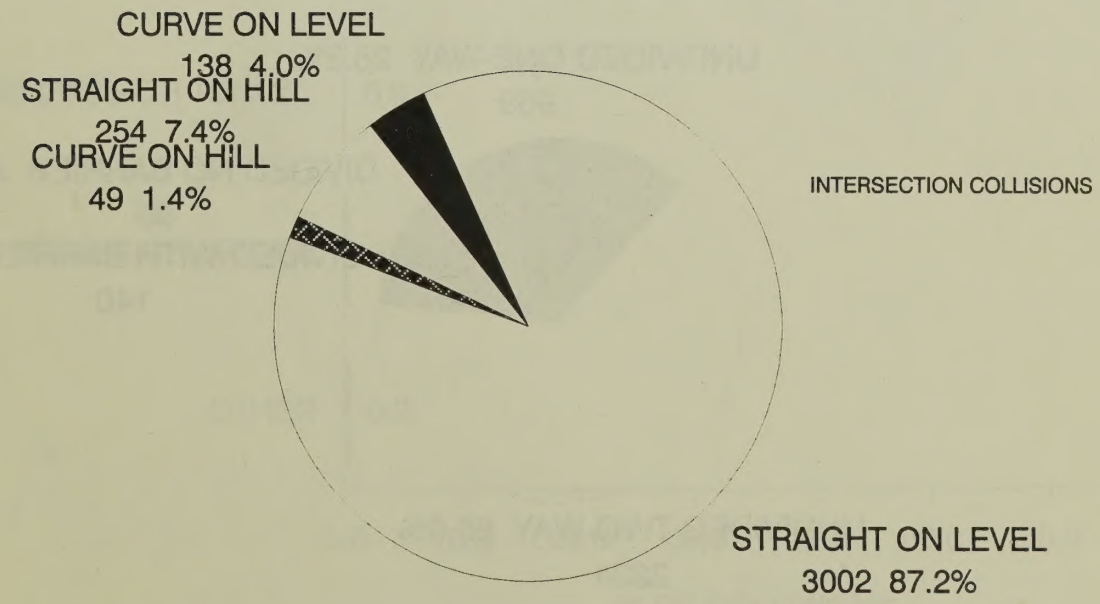


IN 15% OF COLLISIONS, PAVEMENT MARKINGS WERE NOT EASILY VISIBLE.

Exhibit 4.4

ROAD ALIGNMENT IN MOTOR VEHICLE COLLISIONS



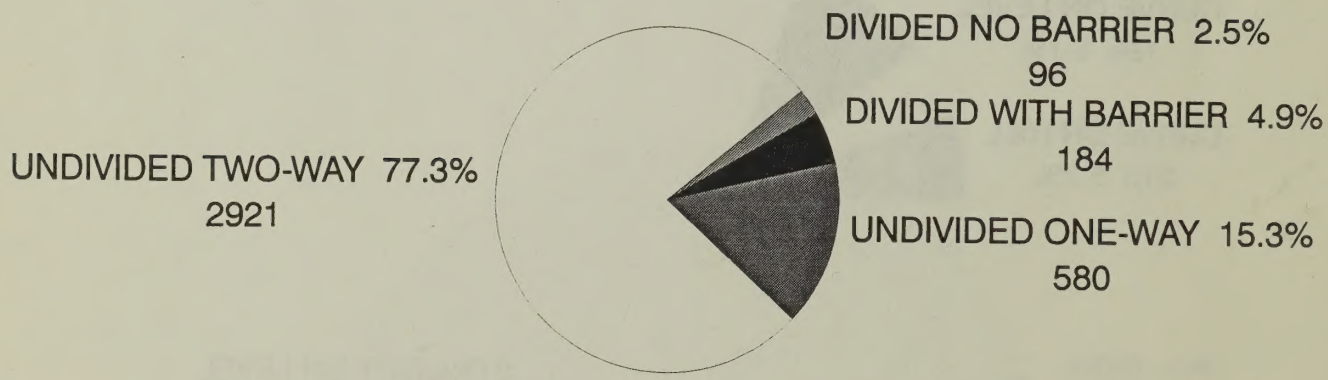


MOST COLLISIONS OCCURRED AT LOCATIONS WITH STRAIGHT, LEVEL GEOMETRICS.

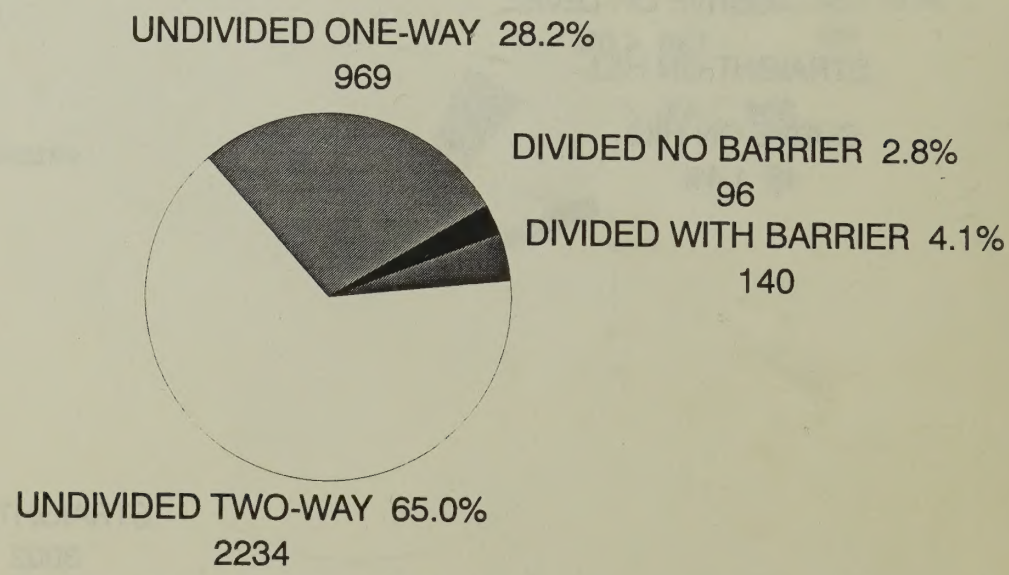
Exhibit 4.5

ROAD CHARACTERISTICS IN MOTOR VEHICLE COLLISIONS

NON-INTERSECTION COLLISIONS



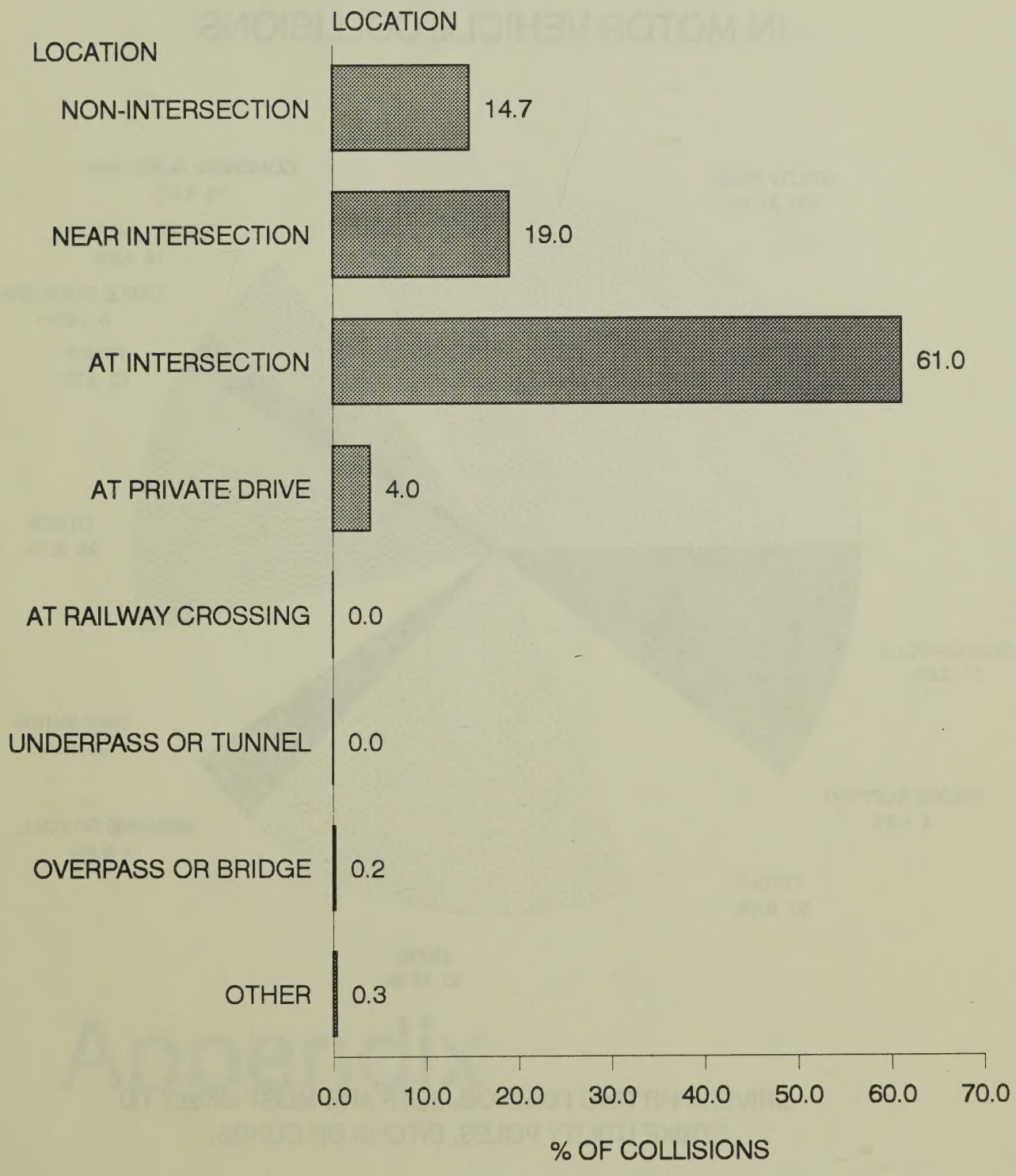
INTERSECTION COLLISIONS



MOST COLLISIONS OCCURRED ON UNDIVIDED TWO-WAY ROADS

Exhibit 4.6

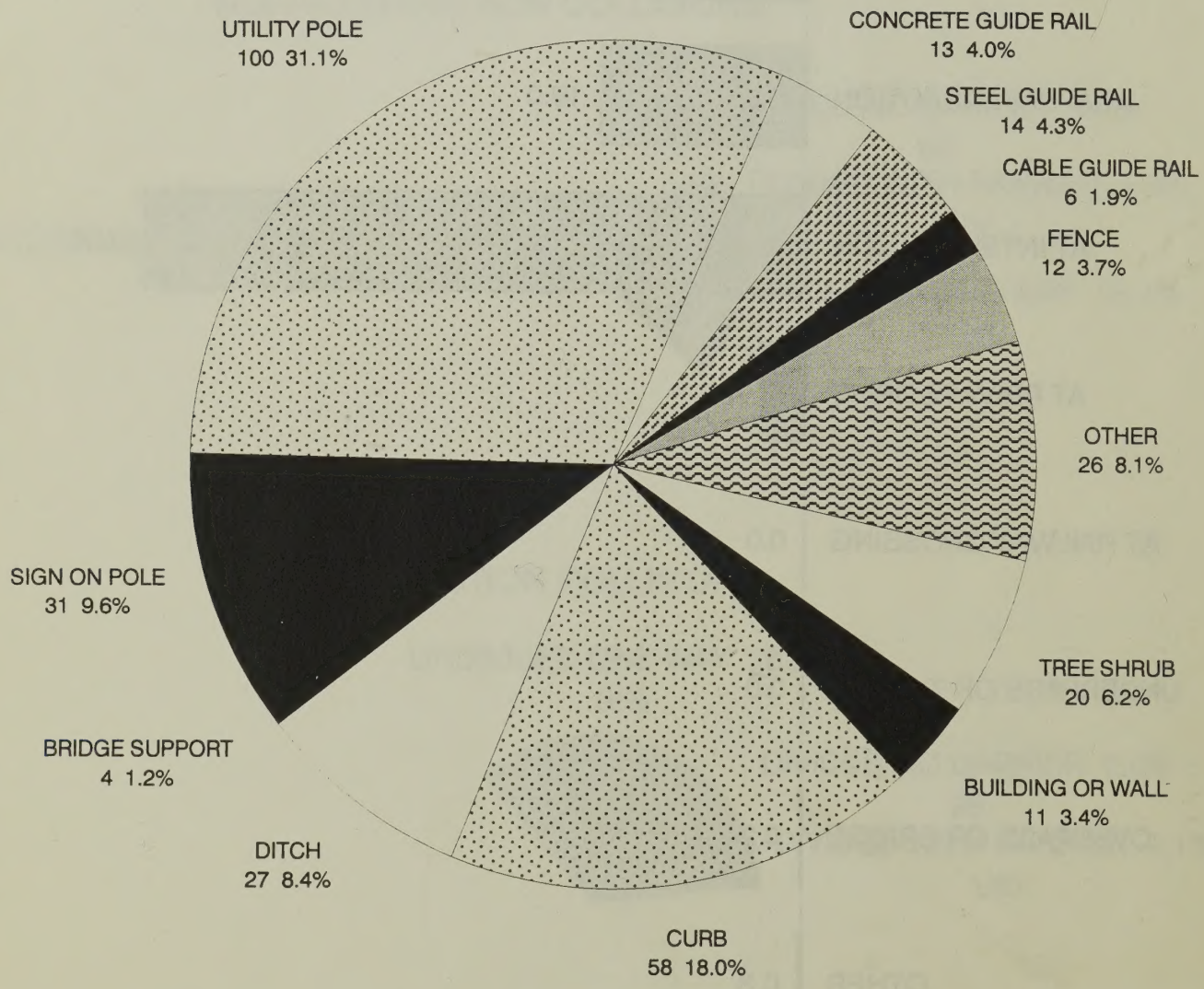
LOCATION OF COLLISIONS



THE LARGEST NUMBER OF COLLISIONS
OCCURRED IN, OR NEAR INTERSECTIONS

Exhibit 4.7

TYPES OF FIXED OBJECTS STRUCK IN MOTOR VEHICLE COLLISIONS

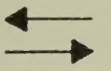
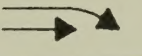
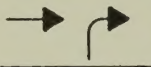


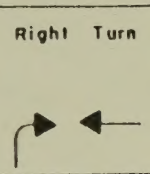
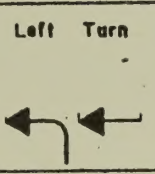
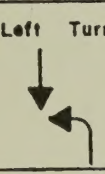
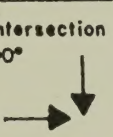
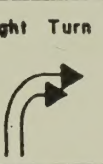
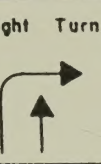
DRIVERS HITTING FIXED OBJECTS ARE MOST LIKELY TO STRIKE UTILITY POLES, DITCHS OR CURBS.

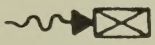
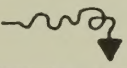
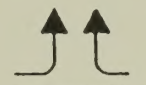
ENVIRONMENT

Appendix

FIELD #45 MOTOR VEHICLE COLLISION REPORTING SYSTEM

Initial Impact Type Diagram	Rear End	Head On	Side Swipe 	Side Swipe	Overtaking 	Right Turn 
Code Value	21	22	23	24	25	26
Short Name *	REAREND	HEADON	SDSWPOP	SDSWPSM	OVERTAK	RTRREND

Right Turn 	Left Turn	Left Turn 	Left Turn 	Intersection 90° 	Right Turn 	Right Turn 
27	28	29	30	31	32	33
RTONCOM	LTONCOM	LTRREND	LTOPTHR	RTANGLE	RTSDSWP	THR/RT

Left Turn	Left Turn	Single Motor Vehicle (SMV) Strikes Unattended Vehicle 	Single Motor Vehicle (SMV) Other 	Pedestrian / Vehicle	Left Turn / Right Turn 	Other
34	35	36	37	38	39	98
LTSDSWP	THR/LT	SMVPARK	SMVOTHR	VEH/PED	LTRTSWP	OTHER

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